



THE
FUTURE
BUILD™
.COM
AN INITIATIVE OF Masdar

Eco-friendly Water Saving
in Modern, Sustainable Landscaping

zeoplant

Technical Information



Natural Water Conservation
For Our Future Generations



What is Zeoplant?

Zeoplant is a very effective water retaining soil additive, consisting of fully natural mineral material.

Zeoplant improves the soil structure and increases the water holding capacity of the soils to the extent that infiltration speed of irrigation water will be reduced by up to 85%. Plant roots have more time to absorb the water and loss of water through percolation is reduced drastically.

It **decreases operation and maintenance cost** for landscaping substantially because

Zeoplant reduces the necessary quantity of irrigation water by 50%

Zeoplant's additional benefits are:

- **Savings of 50% electricity** for pumping of irrigation water
- **Direct wear & tear savings** on maintenance for pumping units & irrigation equipment
- **Run-time reduction** of the irrigation system which reduces man hours at operation
- **Reduction of storage cost** for irrigation water (minimize/ eliminate tanks)
- **Reduction of chemical fertilizers** during maintenance and operation through prevention of leaching. Therefore monetary savings in time, logistics, labour, spreading
- **Healthier and faster growth** of plants and crops which can be substantially proven (temperature controlled areas, i.e. Green houses and open areas) **pH is reduced** and **EC increased** which effects growth rate by providing the plants more nutrients
Zeoplant has a **high CEC** and contains lots of nutrients
- **Replaces the usage of peat moss** completely
- **Reduces carbon footprint**
- **Reduces plant mortality**

Due to its mineral origin, Zeoplant does not need any re-application and stays active in the soil for many years.

Zeoplant packaging

500 kg bag



25 kg bag



Natural Mineral Origin of Zeoplant



Zeoplant is a Natural Mineral Resource Originated in Hungary



Zeoplant is a Natural Resource and a Mining Product



Broken Rock Pieces of Zeoplant's Minerals



Zeoplant is Manufactured in Hungary



Zeoplant Factory in Hungary

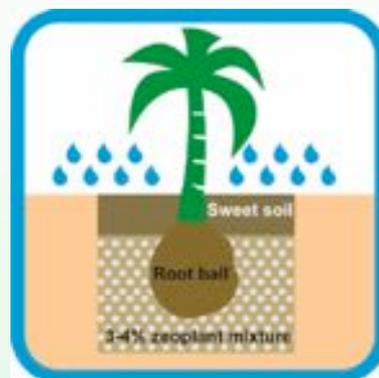
Due to its rock type origin, Zeoplant has an extremely long life span and remains active in the soil for more than 35 years!



Installation of Zeoplant for New Plantations

Palm Trees & Trees

Mix Zeoplant with sweet soil taken out of the tree pit at ratio 3-4% by volume. Fill the mix back to the pit at 15 – 30 cm layer; then place the root-ball on this layer and fill the rest of the Zeoplant-sweet soil mix around the root-ball until root-ball is fully covered. Fill the upper pit with normal sweet soil.

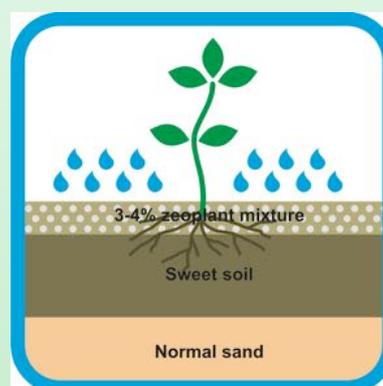


Shrubs & Ground cover

Mix Zeoplant with sweet soil and fill around the roots of the plants similarly to the application for trees. For planting beds just mix Zeoplant at 3 – 4 kg/ m² in the sweet soil at a depth of 15 – 30 cm

Lawns

Apply 3 kg/m² on the sweet soil and rake in or mix in by rotavator at a depth of 8–10 cm. After levelling of the Zeoplant-sweet soil mix, grass can be planted by stolons or turf.



Physical & chemical characteristics of Zeoplant

pH	:	6.7 – 7.1
Content of potassium	:	3 %
Soluble potassium content	:	0.7 %
Content of nitrogen	:	800 mg/kg
Content of phosphorous	:	400 mg/kg
Ca & Mg	:	160 meq/kg

Guaranteed savings by using Zeoplant:

- Minimum 50% irrigation water
- Minimum 50% on NPK fertilizers
- Pumping, storage, electricity & maintenance cost for irrigation



Application Rates Zeoplant

Please find our application rates for Zeoplant (new plantations) as follows:

Plant	Unit	Dosage Kg/unit	Mixing methodology
Palms	piece	30-150	Depending on root depth & pit size to achieve 3% ratio by volume
Trees	piece	20-120	Depending on root depth & pit size to achieve 3% ratio by volume
Shrubs	piece	1-2	Depending on root depth/volume
Shrubs	m ² bed	5	Mixed in the upper 20 cm of the topsoil
Grass	m ²	3	Mixed in the upper 8-10cm of th topsoil
Ground cover	m ²	3-4	Mixed in the upper 10-15cm of the topsoil
Ornamental grass	piece	1	Mixed in the grass pit
Flower bed	m ²	3	Mixed in the upper 8-10cm of the topsoil

The ideal ratio of Zeoplant should be at 3-4% mixture to the sweet soil at the roots level.

How to apply Zeoplant

on-site application at 3 kg/m² by rotavator

pre-mix application at 3-4% by volume



Zeoplant is just applied once and does not need any reapplication later on !

Application of Zeoplant



Easy Application of Zeoplant (Grass plantation)



Application of 3 kg Zeoplant per m² (10sqft) on top of the sweet soil



Mix into the upper roots level (approx. 8-10 cm) by rotovator or rake

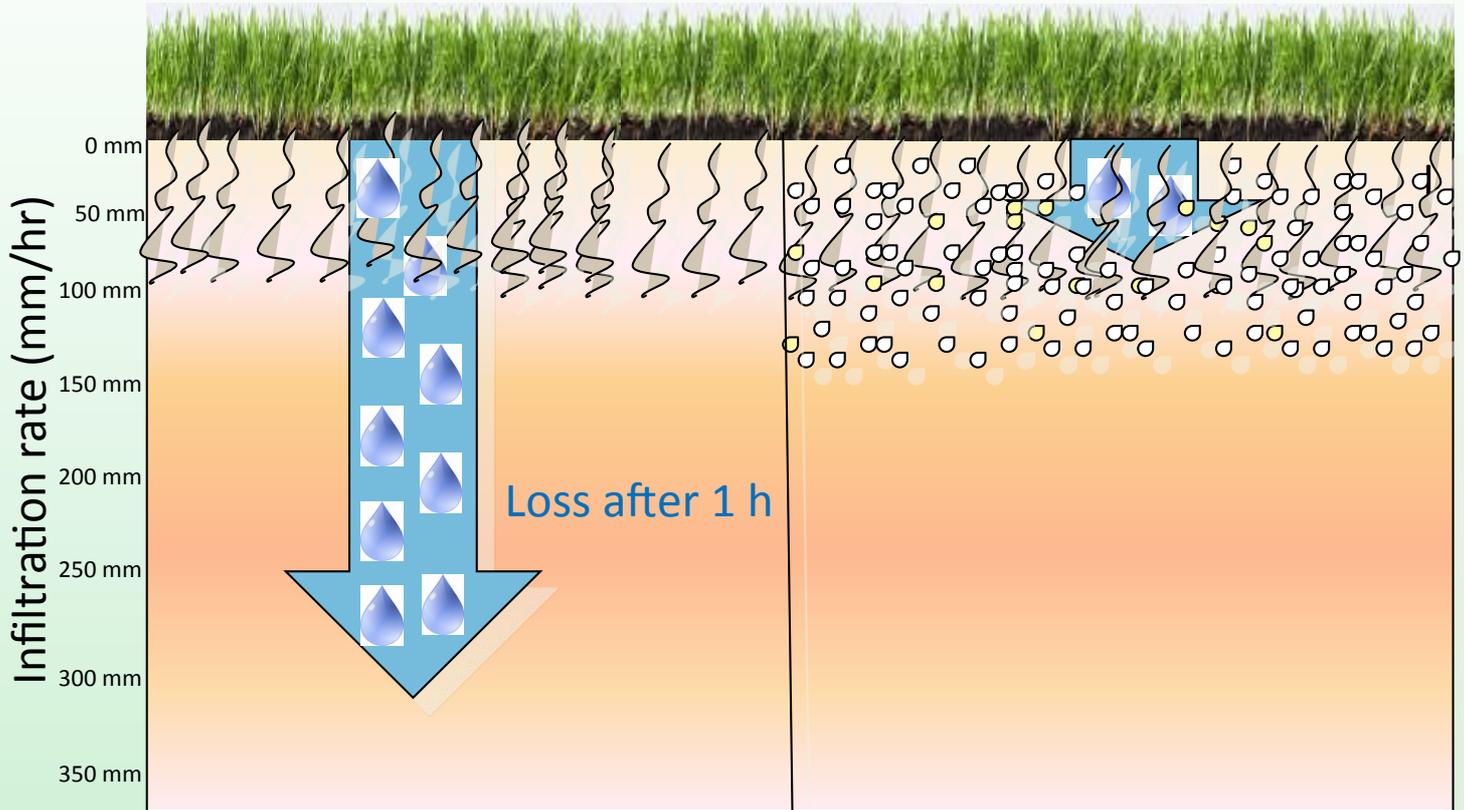


Levelling of the sweet soil/ Zeoplant mix - ready for seeding

Zeoplant Reduces The Infiltration Rate



The chart shows how deep the irrigation water flows down the soil within 1 hour



Soil without Zeoplant

Soil with Zeoplant

PHYSICAL PROPERTIES (ASTM F-1815-97 with water release, Modified¹)



Lab ID No.	Sample	Bulk Density (g/cc)	Particle Density (g/cc)	Ksat Infiltration (mm/hr)	Total Porosity %	Aeration Porosity ² %	Capillary Porosity ² %
19670-1	Sweet Soil	1.59	2.68	319	40.6	19.4	21.2
19670-1a	95-5 Sweet Soil - Zeoplant	1.64	2.68	45	38.7	8.6	30.1
19670-2	Red Soil	1.59	2.68	328	40.6	21.3	19.3
19670-2a	95-5 Red Soil - Zeoplant	1.60	2.66	75	39.7	15.4	24.3

¹ Compaction energy modified to 1.2 J/cm²

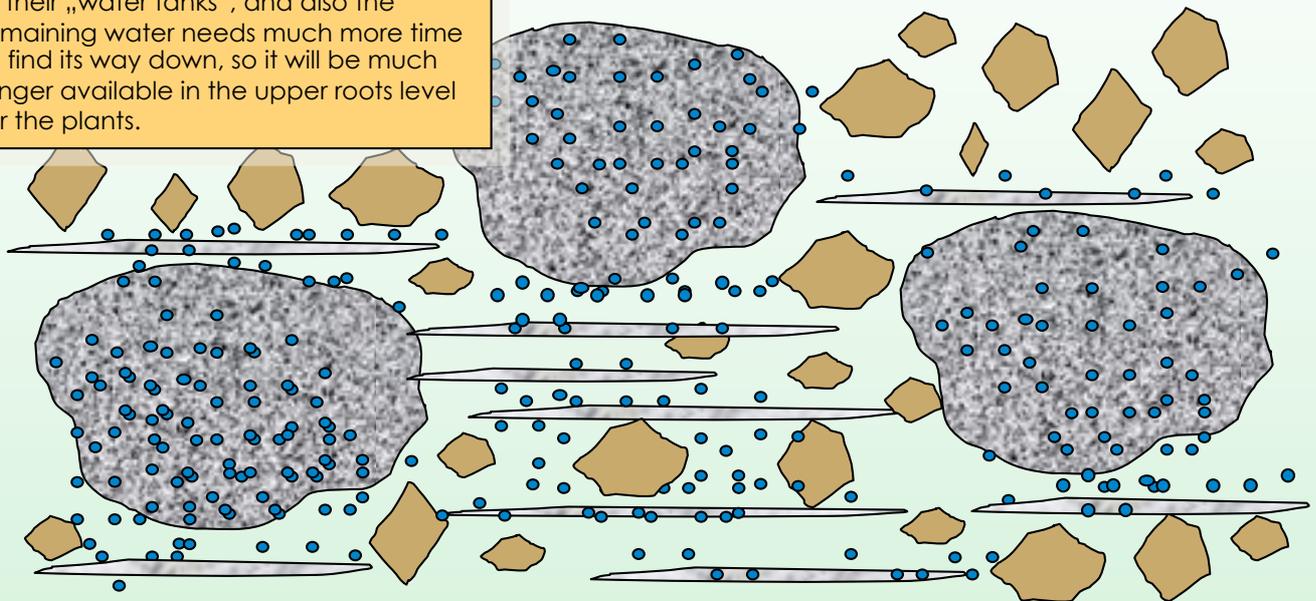
² Determined 0.06 bar

This laboratory results had been measured by Hummel & Co., accredited USGA Lab from USA.

How Does The Zeoplant Effect Work?



The irrigation water can't „rush” through anymore due to the strongly decreased percolation time. The components can fill their „water tanks”, and also the remaining water needs much more time to find its way down, so it will be much longer available in the upper roots level for the plants.



Without Zeoplant

Synthetic fertilizers

N P K

Active soil level of the roots

A high amount will be washed out by the irrigation water into the ground, causing environmental problems and wasting money!!!

With Zeoplant

Synthetic fertilizers

N, P, K, Ca, Cu, Fe, Mn, Mg, Mo, Se, C

The Zeoplant particles bind the nutrition elements on its active surface and avoid to washing them out by the irrigation water. The Zeoplant particles keep all necessary macro, mezzo and micro elements in the active zone where the plants can use them. With this effect the necessary amount of N:P:K fertilizers and other organic fertilizers can be reduced.

Success story for sustainable irrigation water saving based on a family park for Abu Dhabi Municipality



Delma Park Abu Dhabi

Delma Park is a beautifully landscaped recreational park located opposite Sea Palace in Abu Dhabi. Under the umbrella of Crown Prince Court Abu Dhabi, the park was designed by Dorsch Consult and included Zeoplant as Moisture Retaining Soil Additive in the specifications to fulfill the client's request to reduce irrigation water.

After completion of construction, the park was handed over by the client to Abu Dhabi Municipality for maintenance & operation in January 2014.

Irrigation had been reduced from handover date were the **daily water savings are measured to 76,000 liters** which corresponds to a **total irrigation water saving of 55%!**

Dorsch Consult & Zeoplant are still recording the successful results in weekly reports which are duly countersigned by the client's representative and the resident engineer of the consultant. The park serves as a role model for Abu Dhabi Municipality for ESTIDAMA compliant excellence.

Zeoplant thanks all parties involved, namely Crown Prince Court Abu Dhabi, Abu Dhabi Municipality, Dorsch Consult and Al Ryum for the great achievement which is a further prove that quality assurance during design and construction will pay back in real terms.



Project Reference List (1)

United Arab Emirates



Dubai



Project	Client	Year
The Palm Jumeirah	Nakheel	2006-2007
Knowledge City – Academic City	TECOM (Dubai Holding)	2007
Motor City – Green Community	Union Properties	2008
Downtown Jebel Ali – Zone 1	Limitless	2009
Za'abeel Palace of H.H. The Chairman of Dubai Municipality, Sheikh Hamdan bin Rashid Al Maktoum	Dubai Municipality H.H. The Chairman	2009
The Fairmont Residences- Palm Jumeirah	IFA Hotels & Resorts	2009
Jumeirah Village Triangle	Nakheel	2009
Doka Gulf FZE Headquarter	Doka Gulf FZE	2011
The Fairmont Hotel - Palm Jumeirah	IFA Hotels & Resorts	2012
Meydan Beach Club – Jumeirah Beach	Meydan	2012
Ocean View Hotel – Jumeirah Beach	Jebel Ali Resorts & Hotels	2012
Jumeirah Village Triangle	Nakheel	2012
Waldorf Astoria Hotel	Hilton Worldwide	2013
The World - Heart of Europe	Kleindienst Group	2014
Tree Plantation – Sheikh Zayed & Al Qudra Road	Dubai Municipality	2014
Al Badia Festival City	Dubai Festival City	2015
Al Habtoor City	Al Habtoor Group	2015
The Address Hotel Boulevard Downtown	The Address Hotels + Resorts	2015
Citywalk	Meraas Holding	2015
Jumeirah Golf Estates Orange Lakes & Villas	Jumeirah Golf Estates	2015
Al Fattan Crystal Towers Jumeirah Beach	Al Fattan Properties	2015
Dubai Parks & Resorts	Dubai Parks & Resorts	2016
Lantana Villas	Tecom Group	2016
Living Legends	Tanmiyat Group	2016
Bluewaters	Meraas Holding	2017
Jumeirah Bay	Meraas Holding	2017

United Arab Emirates



Abu Dhabi



Project	Client	Year
Liwa Roundabout – Western Region	PGD Abu Dhabi Municipality	2008
Sir Bani Yas Island- Desert Islands Resort & Spa by Anantara	TDIC	2008
Al Bateen Palace of H.H. Sheikh Khalifa bin Zayed Al Nahyan	Private office of his H.H. President Sheikh Khalifa bin Zayed Al Nahyan	2008
Qasr Al Sarab Desert Resort & Spa	TDIC	2009
Raha Gardens	Aldar/Private House Owners	2009
Shuttle Bus Link Road – Yas Island	Aldar	2009
Yacht Club Yas Marina – Yas Island	Aldar	2009
Streetscapes – Yas Island	Aldar	2009
Yas Marina Circuit (Formula 1)– Yas Island	Aldar	2009
Desert Towers	Al Qudra Holdings	2009
IKEA Warehouse - Yas Island	Al Futtaim Group	2010
Al Raha Beach	Aldar	2010
Aldar Headquarter	Aldar	2010
Mina Residential Palace	Royal Group	2010
Manarat Saadiyat – Saadiyat Island	TDIC	2010
Yahsat SGS Project	Yahsat/Aldar	2010
Abu Dhabi Financial Centre	Mubadala Development Company	2011
The Court of the Crown Prince (CPC)	H.H. Crown Prince Court, Abu Dhabi Emirate	2011
Capital District (Group 3 Project)	Abu Dhabi Government	2011
Westin Golf Resort	TDIC	2011
Mafraq Dialysis Centre	SEHA Abu Dhabi Health Services	2011

Project Reference List (2)

Abu Dhabi (cont'd)

<u>Project</u>	<u>Client</u>	<u>Year</u>
Sir Bani Yas Island Al Yamm Lodge, Sports- & , Conference Centre	TDIC	2011
New IKEA Development- Yas Island	Al Futtaim/Aldar	2011
Delma Street Median	Abu Dhabi Municipality	2012
Yas Island – Reinstating of North Park Area	Aldar	2012
Al Khatim Desert Camp	Abu Dhabi Tourism Authority	2012
Siemens Headquarter Masdar City	Siemens	2013
Yas Marina Enhancement	Aldar	2013
Premier Inn Hotel	Premier Inn Hotels LLC	2013
Sheikh Khalifa Mosque	Aldar	2013
FERTIL – Administration Building Ruwais	FERTIL-ADNOC (Abu Dhabi National Oil Company)	2013
Delma Park	Crown Prince Court Abu Dhabi	2013
New York University – Saadiyat Island	Mubadala Development Company	2013
Sea Palace Abu Dhabi	Crown Prince Court Abu Dhabi	2014
Contract No. 499 – Development of Parks & Playgrounds in Mainland	Abu Dhabi Municipality	2014
Emirates Nuclear Energy Project - Ruwais	Emirates Nuclear Energy Corporation	2015
Tawam Hospital – Al Ain	SEHA Abu Dhabi Health Services	2015
Presidential Palace – Abu Dhabi	Ministry of Presidential Affairs (MOPA) - Abu Dhabi	2015
Al Ain Wildlife Park & Resort	Al Ain Zoo	2015
Mafraq Hospital	SEHA Abu Dhabi Health Services	2016
EMAL Admin. Offices & Facilities	EMAL – Emirates Aluminium	2016
Memorial Park	Crown Prince Court Abu Dhabi	2016

Umm Al Quwain

UAQ Marina Project	Umm Al Quwain Government	2011
Private Farm of H.H.	H.H. Sheikh Saud Bin Rashid Al Mualla	2011
Road Project	Public Works & Services Department UAQ	2016

Ras Al Khaimah

<u>Project</u>	<u>Client</u>	<u>Year</u>
RAK Bank Headquarter	RAK Bank	2009
Mina Al Arab	RAK Properties	2010 - 2011
Civil Defence Median & Roundabout	Government of Ras Al Khaimah – Public Works & Services Dept.	2013
Flamingo Villas	RAK Properties	2015
Bermuda Villas	RAK Properties	2017

Qatar



Al Rayyan Municipality – Luqta Park	Al Rayyan Municipality	2010
New Doha International Airport (NDIA)	Qatar Aviation Authority	2010
Lusail	Qatari Diar	2011
Museum of Islamic Art	Qatar Museums Authority	2011
Ras Umm Leigi Palace	Private Engineering Office	2012
Umm Salal Project	Private Engineering Office	2012
Burj Marina 08 Lusail	Qatar Foundation	2013
West Green Spine	Qatar Foundation	2013
Educational City HQ	Qatar Foundation	2013
Anantara Island	Private Engineering Office	2013
Kaa'ban Nursery	Urbacon General Contracting	2013
Car Parks & Landscaping Lusail Underground Parking	Lusaill	2013
Wajba Palace	Private Engineering Office	2013
Souq Al Waqif	Private Engineering Office	2014
Al Wajba Palace Club House & Guest facilities	Private Engineering Office	2014

Project Reference List (3)

Qatar (cont'd)

<u>Project</u>	<u>Client</u>	<u>Year</u>
Aspire Park	Aspire Logistics	2014
Supreme Educational Council HQ	Supreme Educational Council	2014
South Side Wide Infrastructure	Qatar Foundation	2014
Marriage Halls Project	Private Engineering Office	2014
Labour City Accommodation @ Messaimeer	Barwa	2014
Msheireb Down Town Doha Project, Construction of Heritage Quarter	Msheireb Properties	2014
Sheraton Doha Resort & Convention	Sheraton Hotels & Resorts	2014
Q Gardens	Qatar University	2015
Lusail	Lusail Real Estate Development Company	2015

Kingdom of Saudi Arabia



Qassim Parks	Qassim Municipality	2008
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Bahrain



Durrat Al Bahrain	Government of Bahrain	2007
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Eritrea



Dhalak Island	Qatari Diar / H.H. Sheikh Hamad bin Khalifa Al Thani	2010
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Oman



<u>Project</u>	<u>Client</u>	<u>Year</u>
Misc. Projects in Muscat	Private Office of H.M. Sultan Qaboos	2007
Majlis Oman Project	Government of Oman	2012
Sultan Qaboos Mosque – Khasab Region	Royal Court Affairs Project	2016

Iran



Kohsar Jungle Park Tehran	Tehran Municipality	2009
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Iraq



Baghdad International Airport	Iraqi Airport Authority	2009
US Embassy Baghdad	US Department of State	2009

Kuwait



Alghanim Nursery	Mr. Koutaiba Alghanim	2011
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Vietnam



Montgomerie Links Golf Course	Indochina Land Holdings (under Management of IMG)	2007
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South Africa



Khayelitsha Hospital	Department of Public Works	2011
Steyn City	Steyn City Properties	2012

Morocco



Moroccan Solar Programme	Moroccan Agency for Solar Energy (Masen)	2015
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Emirate of Abu Dhabi
Department of
Municipalities and Agriculture
Abu Dhabi Municipality



إمارة أبوظبي
دائرة البلديات والزراعة
بلدية أبوظبي

Date: 3 /05/2006

Ref. : DMA/PGD/PROJ/06/577

M/S. SPECIAL TECHNICAL EQUIPMENT:

P.O. BOX: 45481

Abu Dhabi

دائرة البلديات والزراعة - بلدية أبوظبي

إدارة الحدائق العامة

(الصادر)

٢٤٥٨

٧٦/٥/١٩

577/2

الرقم الصادر

المخصصة

التاريخ

التاريخ : 2006/5/3

المرجع : ق / ط / ح ع ل

السادة/ المعدات التقنية

صندوق بريد: 45481

أبوظبي

Dear Sir,

بعد التحية ،،،

Subject : WATER RETENTION – ZEOPLANT.

الموضوع: طلب اعتماد تربة زراعية حافظة للماء

With reference to the above mentioned subject and to your letter ref: M.T.A./1222/2006 dated 8/3/2006, forwarding the attached submittal and tests for approval.

بالإشارة إلى الموضوع أعلاه وخطابكم رقم :
ت.م/ع/1222/2006 بتاريخ 2006/3/8،
والمرفق بها مستندات الاعتماد المطلوبة .

Please be advise that the committee decided to approve the above mentioned material and to include it in the division data base.

يرجي العلم بان اللجنة قررت الموافقة على المادة
أعلاها ، و تسجيلها في سجل الشعبة للمواد و
المصانع المعتمدة.

Regards,

وتقبلوا التحية ،،،

المهندس/ فري حسن احمد المزروعى
مدير إدارة الحدائق العامة

نسخة الى:
✓ مكتب سعادة / الوكيل المساعد لقطاع الطرق و الخدمات الفنية
م/م/ محمد خلف المزروعى / رئيس قسم التشغيل والصيانة
م/م/ حسن الجفري / رئيس قسم المشاريع
م/م/ جمال النعيمي / رئيس شعبة التصميم
م/م/ محمد الجفري / رئيس شعبة المواد و ضبط الجودة

Date: 25th February, 2016

TO: MR. SIMON ENGELFRIED

Project Manager
Zeoplant LLC

Subject: Motor City Green Community Project – Zeoplant Water Saving

Dear Sir,

With reference to our meeting and discussion about the irrigation water savings at Motor City Green Community, we would like to state the following.

Dubai Motor City is divided into two projects called Green Community and Uptown. Zeoplant - Moisture Retaining Soil Additive was part of the soil mix in Green Community during the construction in 2008. Our company ServeU took over the maintenance package for both projects from the former landscaping contractor in 2013.

We are getting an average irrigation usage of 6,500m³/day for the entire Motor City. The detailed irrigation schedule of both projects is as follows.

Green Community irrigation as per design, Sprayers are running 4 minutes, 2 times daily and Drip line is running 18 minutes, 2 times daily.

Green Community with Zeoplant

- Sprayer : 0.75 lpm = 8 minutes run time (24 Hours) = 6 liters/m²/day
- Drip line: 0.9 gph = 36 minutes run time (24 Hours) = 0.54 gal (each dripper)
- Daily water consumption 1,266 m³
- Water saved daily 1,266 m³

Uptown irrigation as per design, Sprayers are running 9 minutes, 2 times daily and Drip line is running 48 minutes, 2 times daily.

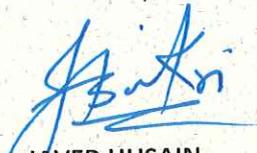
Uptown without Zeoplant

- Sprayer : 0.75 lpm = 18 minutes run time (24 Hours) = 13.5 liters/m²/day
- Drip line : 0.9 gph = 96 minutes run time (24 Hours) = 1.44 gal (each dripper)
- Daily water consumption 5,334 m³
- Water saved daily 0 m³

This irrigation schedule was forwarded to Zeoplant LLC from the former landscaping contractor and did not change since our take over.

For Green Community, the stated timing for sprayers, sprinklers and drip line is correct. We agree with the statement of Zeoplant and hereby confirm that the information is correct regarding savings of irrigation water for Green Community.

Yours Truly,


JAVED HUSAIN
Facilities Manager





الموضوع: شهادة لمن يهمه الامر

نتائج تجريب منتج زيوبلانت على نمو نجيل برمودا ومغطيات التربة، في حديقة اللقطة، بلدية الريان، قطر.

تجريب زيوبلانت على نمو نجيل برمودا:

تابع قسم الحدائق العامة في بلدية الريان، وبالتعاون مع شركة أبا للزراعة والمصادر، تجريب منتج الزيوبلانت في حديقة اللقطة للعائلات، بعد خلطه مع التربة بمعدل ٣ كيلوغرام للمتر المربع، وعلى عمق من ٧ إلى ١٠ سنتيمتر. ثم زراعة ستولونات النجيل غرزاً دون أية إضافات عضوية أو معدنية لموقع التجريب. في الفترة الممتدة من ٢٠ مايو/أيار ٢٠١٠ وحتى أواخر شهر أكتوبر/تشرين الأول ٢٠١٠م. وعلى مساحة تقدر بـ ٨٤ متر مربع.

فترة الإنبات (الإنشاء):

بلغت كمية المياه المضافة للمتر المربع خلال الشهر الأول بعد الزراعة ٩ لتر/ المتر المربع وهي تعادل ٦٠% من معدلات الري الموصى بها حسب المواصفات القطرية لمثل فترة التجربة وهي ١٥ لتر/ المتر المربع. أي بتوفير في مياه الري وقدره ٤٠% عند التأسيس للزراعة.

كان إنبات النجيل وتغطيته في منطقة زيوبلانت رغم انخفاض معدل الري أفضل نسبياً بالمقارنة مع منطقة الشاهد الخالية من منتج زيوبلانت، وكان تجانس النمو واللون واضحاً بالمقارنة مع منطقة الشاهد.

فترة البلوغ والصيانة:

حافظ المسطح الأخضر على تجانس نموه ولونه رغم تخفيض كمية المياه المضافة للمتر المربع بعد شهر من الزراعة من ٩ لتر/ المتر المربع إلى ٧ لتر/ المتر المربع وهي تعادل ٤٧% من معدلات الري الموصى بها حسب المواصفات القطرية لمثل هذه الفترة من السنة. أي بتوفير في مياه الري يصل إلى ٥٣%.

إضافة إلى مواصفات النجيل فوق سطح التربة، وبعد فحص نمو الجذور ومدى كثافتها وتوزعها في تربة زيوبلانت تبين أن كثافة الجذور وتوزعها ولونها لا يختلف عنها في منطقة الشاهد على الرغم من تخفيض معدل الري.



BIDDING NATION
QATAR

مغطيات التربة:

لم يظهر أي فارق في نمو مغطيات التربة المزروعة في تربة مخلوطة بمنتج زيوبلانت عن مثيلتها المزروعة في منطقة الشاهد على الرغم من تخفيض كمية الري حتى ٣.٦ لتر/ المتر المربع. وهي تعادل ٣٦ % من معدلات الري الموصى بها حسب المواصفات الفنية القطرية والبالغة ١٠ لتر/ المتر المربع. أي بتوفير في مياه الري يصل إلى ٦٤ %.

في بداية شهر أكتوبر نفذنا قص جائر مع تقطيع رأسي ثم تهوية مع المحافظة على كمية ٧ لتر/ المتر المربع وبقي المسطح الأخضر محافظاً على النتائج السابقة في فترة الإنشاء والصيانة بالمقارنة مع الشاهد رغم انخفاض معدل الري.

ونفـسـلـوـا بقبـول فائـز الـاحـمـر والـتـسـمـير،،


م/ جمال ماطر النعيمي

مدير بلدية الريان



Legal Translation

النموذجي للترجمة القانونية و السكرتارية Ideal Legal Translation & Secretarial

ترجمة قانونية

STATE OF QATAR

Ministry of Municipal & Urban Planning

Rayyan Municipality

Tel.: 4819222 – 4825444 – P.O. Box: 90224 Doha – Qatar

ISO 9001:2000 Certified

Bureau Veritas Certification

Subject: Certificate To Whom It May Concern

Results of experimenting the Zeoplant product on the growth of Bermuda grass and ground covers, in Al Luqta garden, Rayyan Municipality, Qatar.

Experimenting Zeoplant on the growth of Bermuda grass:

The Public Gardens Department in Rayyan Municipality, in collaboration with Abba Agriculture and Resources Company, continued to try Zeoplant product in Al Luqta Family Garden, after being mixed with the soil at a rate of 3 kilograms per square meter, and in depth of 7 to 10 centimeters, then planting grass stolons by implantation without any organic or mineral additions to the experiment site, in the period extending from 20 May 2010 to the end of October 2010, on an area estimated by 84 sq. m.

Germination (Generation) Period:

The water added to a square meter during the first month after implantation was 9 liters / sq. m., equivalent to 60% of the recommended irrigation rates according to the Qatari specifications for such period of trial, which is 15 liters / sq. m., i.e. saving irrigation water by 40 % when laying the foundation for planting.

Germination and covering of the grass in a Zeoplant area, in spite of the decreased irrigation rate, were relatively better in comparison with zeoplant-free Al Shahed area, and the consistency of growth and color was clear in comparison with Al Shahed area.



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Legal Translation

النموذجي للترجمة القانونية و السكرتارية Ideal Legal Translation & Secretarial

ترجمة قانونية

Maturity and Maintenance Period:

The green surface has maintained consistency of its growth and color in spite of decreasing the water added to the square meter after one month from implantation from 9 liters / sq. m. to 7 liters / sq. m., equivalent to 47% of the recommended irrigation rates according to the Qatari specifications for such period of the year, i.e. saving irrigation water by up to 53%.

In addition to specifications of the grass above the ground surface, and after examining growth of roots and their intensity and spread in zeoplant soil, it has become clear that the roots intensity and spread and color are not different from those existing in Al Shahed area in spite of decreasing the irrigation rate.

Ground Covers:

No difference has appeared in the growth of the ground covers implanted in a ground mixed with zeoplant product against others that are implanted in Al Shahed area in spite of decreasing the irrigation water up to 3,6 liters / sq. m., equivalent to 36% of the recommended irrigation rates according to the Qatari technical specifications amounting to 10 liters / sq. m., i.e. saving irrigation water by 64%.

At the beginning of October, we have implemented arbitrary mowing together with vertical cutting then ventilation while maintaining a quantity of 7 liters / sq. m. and the green surface sustained the previous results in the generation and maintenance period in comparison with Al Shahed area in spite of the decreased irrigation rate.

Kindly accept best regards and respects,,

(Signed)

Eng. Jamal Matar Al Nuaimi
Rayyan Municipality Director



هاتف : ٢٢٢٣٦٩٩ تليفاكس : ٢٢٢١١٠٤ ص.ب : ١٤٠٧٠ دبي - الامارات العربية المتحدة

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KHAYELITSHA HOSPITAL LANDSCAPED GARDENS – REPORT ON ZEOPLANT SOIL ADDITIVE TRIALS

With reference to the photographs below which show the planting beds on either side of the access road off Walter Sisulu Drive to the Khayelitsha Hospital. In September 2011, Zeoplant soil additive was incorporated by the landscape sub-contractor, as per the manufacturers specifications, into the soil mixture prior to planting in the bed on the north side of the access road and was left out of the soil mixture on the south side of the road. See photos below.



The photos below show the results of the plant growth after 20 months in March 2013 at end of a long dry, summer. Plant growth is good and the hedge on the north side is slightly taller and thicker than on the south. Irrigation was operational during the majority of this period.



Photo of access road with North on left side of pic.

North side planting.

South side planting.

The photos below show the results of growth after a further 18 months in September 2014.



Photo of access road with North on left side of pic. North side planting with soil completely covered. South side planting with many gaps & soil exposed.

The planting is clearly growing more strongly on the north side of the road where the Zeoplant soil additive was included in the soil mixture and the hedge and Auracaria trees show much healthier and denser foliage. Much of the ground cover planting on the south side has not survived. It should be noted that the irrigation system was broken for a long period over the 2013/14 summer months and neither side of the road was adequately watered. However, the north side of the road has recovered quickly during winter and the plant growth is strong and healthy.

I therefore recommend that Zeoplant be added to the soil mixture in all future landscaping and planting projects where water saving is required and especially in dry, sandy soil conditions such as the Cape Flats of Cape Town.



CLARE C A BURGESS

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GREEN CONCEPTS
INTERNATIONAL

Mr. Ralf Stahl
Managing Partner
Zeoplant
P.O. Box 72412
Dubai, United Arab Emirates
27th March 2010

Re RAK Bank Project

Dear Ralf

We are pleased to confirm our satisfaction with Zeoplant as a soil moisture additive. Green Concepts (GCLA) specifies Zeoplant for all our projects because it is a natural mineral with exceptional soil moisture retaining capacity. Being a natural mineral it is a permanent addition to sweet sand and its benefits do not decline as the landscape matures.

The actual irrigation water reduction evident on the RAK bank project is approximately 50% simply because the irrigation intervals were every two days instead of daily at the establishment phase and reduced to every four days instead of every two days during the cooler months. This information is based on central irrigation controller data.

We noted that the contractor found it very simple to spread Zeoplant and to mix it with the sweet sand.

GCLA has also noted:

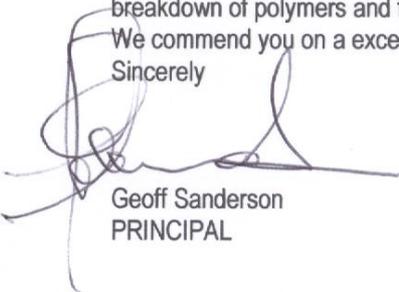
- faster, healthier growth of lawn (stolons), groundcover & shrubs and healthy tree and palm growth...
- reduced usage of chemical fertilizers during maintenance period due to reduced leaching and high nutrient content of Zeoplant

GCLA follows Estidama (Abu Dhabi) and Leed (Dubai) guidelines for all projects and believe the water reduction provided by Zeoplant is a fundamental aspect of such improved water management.

We are not in favor of synthetic polymers for soil moisture retention, or any product containing polymers, simply because of the energy required to produce them and the concern we have over the chemical breakdown of polymers and the possible long term detrimental effect it may have on the soil environment.

We commend you on an excellent product.

Sincerely



Geoff Sanderson
PRINCIPAL

P.O. Box 211373
Dubai
United Arab Emirates
Tel: 04 3310840
Fax: 04 3312114
Landscape Architects



OMAN | حديقة
BOTANIC | النباتات
GARDEN | والأشجار
العُمانية

28 January, 2012

This is to certify that we have used the product Zeoplant at the Oman Botanic Garden in Muscat Oman. We tested the product mainly on our native Omani trees.

The product was administered during the Omani summer of 2011. It was interesting to note that this product Zeoplant was only worked in from the top and not actually dug into a newly prepared soil mixture. Zeoplant was applied to a crop of *Prosopis cineraria* trees already growing in 100 liter air pots. *Prosopis cineraria* is native to Arabia and the western parts of India. The trees in question - foliage was turning yellow, and the plants were not absorbing water as well as they should do.

After only six weeks the results were quite startling. The trees required less water (up to 50% - less than before) their colour improved dramatically and they looked healthy. Their growth rate was dramatic (over the next 6 months) and they soon needed to be transplanted into larger containers

A number of other native Arabian trees were tested all with similar results. I would definitely recommend this product.

Yours sincerely

Ian Oliver

Head of Horticulture

Oman Botanic Garden

Gulf Landscape & Irrigation Systems L.L.C.

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الخليج لأنظمة الري
والبستنة ذ.م.م.
عضو مجموعة الخياط للاستثمار
هاتف : ٢١١٦٦٦٦ ٤ ٩٧١ +، فاكس: ٢١١٦٦٧٧ ٤ ٩٧١ +
Website: www.gulflandscape.com

Ref: GLIS/ZP/13332/MWW

Date: 20th June 2010

TO WHOM IT MAY CONCERN

Project: Motor City – Green Community, Zone 1-5

Consultants: Khatib & Alami

Quantity Surveyor: DG Jones & Partners

Project Management: EDARA

Client: Union Properties

Zeoplant L.L.C, P.O. Box 72412, Dubai, U.A.E

We confirm that Zeoplant L.L.C is the approved supplier to Gulf Landscape & Irrigation Systems L.L.C on the above mentioned project. We are pleased to confirm the following benefits earned during the execution of above project as follows:

- 50% irrigation water savings from date of mixing the product by re-programming of irrigation controllers were achieved, inspected & confirmed
- There were many other savings related to reduced use of compost, fertilizers...etc due to use of Zeoplant.
- Decrease of mortality rate of plants during construction / establishment as commonly plants are severely affected by interruption of water supply.
- Faster and healthier growth of plants, lawns...etc.
- Less usage of chemical fertilizers during maintenance period.

During their contract of supply with us, M/s Zeoplant have undertaken this works diligently, in a professional and timely manner, under the excellent leadership of Mr. Ralf Stahl and his team.

We, as a Landscape Contractor recommend the use of Zeoplant and believe, that is not only to the favor of the client, but extensively to the direct interest of contractor to experience, very good, reliable and sustainable product.

We would have no hesitation in recommending this company/ product for other projects.

Yours faithfully,

For Gulf Landscape & Irrigation Systems L.L.C

Walid Al Wahsh
General Manager



February 27 , 2008

TO WHOM IT MAY CONCERN

Rabya Trading & Agriculture Company had been awarded the landscaping works at the prestigious Durrat Al Bahrain project.

Due to the extremely high water cost in Bahrain, the Client requested using a moisture retaining soil additive for the softscape areas in the project.

Zeoplant was chosen by Rabya because it had been successfully implemented at similar projects in the U.A.E. , mainly Palm Jumeirah , & many other prestigious projects , and had been recommended by leading consultants and contractors.

Zeoplant was easy to apply and did not require any mixing with the sweet sand before application unlike other products.

The consumption of irrigation water was reduced by approximately 50 – 60% during the planting and growing schedule.

Due to the high nutrient content in the product we also realized a healthier and faster growth and establishment of the plants.

Zeoplant has fully met our expectations and we would recommend it for further projects in the area.

This certificate was issued upon the request of Zeoplant for whatever purpose it may serve them without any further responsibility on Rabya Trading & Agriculture Company.

Yours truly,


FARIS JABARA
Area Manager



فرع البحرين: ص. ب ١١٦٨٧ - المنامة - مملكة البحرين - تلفون: ٩٧٣-١٧٣١١٧٢١ - فاكس: ٩٧٣-١٧٣١١٧٢٠ - س.ت ١-١٦٢١٦

فرع الخبر: ص. ب ١٦٨٣ - الرمز البريدي ٣١٩٥٢ - هاتف: ٩٦٦-٣-٨٥٩٢٤٨٠ - فاكس: ٩٦٦-٣-٨٥٩٢٤٧٢

المركز الرئيسي: جدة - المملكة العربية السعودية - ص. ب ٥٥٣٦ - الرمز البريدي: ٢١٤٣٢ - هاتف: ٩٦٦-٢-٦٦٩١٢٥٤ - فاكس: ٩٦٦-٢-٦٦٠١٦٠٣

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Email: rabyabah@batelco.com.bh / rabyaeast@nesma.net.sa / rabyah@rabya.com: البريد الإلكتروني



4 September 2012

Dear Mr Ralf Stahl

STEYN CITY ZEOPLANT TESTING

Steyn City is set to be the Largest and most ambitious multi-use residential/ commercial development to date¹. Having built the Nicklaus design Championship course on the estate, Golf Data was appointed to design and construct green belts, parklands and soft-scaped CBD zones within the vast estate. Our landscaping project on Steyn City started in January 2012 with the first seeding operation taking place on the 18 May 2012 where Golf Data took the opportunity to first test Zeoplant.

It is important to note that South African soils are predominantly poor quality, sandy soils with very low water holding capacity, and the conditions on site at Steyn City are no exception; we hoped that the application of Zeoplant would assist us in better managing these conditions.

We applied Zeoplant at the suggested rate of 3kg/m² onto the existing soil medium after raking and removing debris. Thereafter the Zeoplant was worked into the soil top horizon at a depth of 5cm with a mechanical tilling machine and leveled for seeding. The Tall Fescue (*Festuca arundinacea*) was seeded and watered.

The average temperature we experienced this May was around 18 degrees & with winter rapidly approaching it was not ideal conditions for germination or for testing the conditions. However, on visible inspection it was clear that where Zeoplant had been applied the soil remained moist for longer periods relative to those areas where Zeoplant was not applied.

The Tall Fescue seed germinated in 12 days and was consistent for both sample areas. Conditions are currently warming up and further testing and comparisons will be done during the growth phase up to and including completion, although at face value the results to date are very encouraging.

We look forward to making use of Zeoplant on the Steyn City driving range shortly as we will then be able to provide more accurate comparisons of water and fertilizer usage relative to adjacent golf holes.

Kind regards

Hilton Stephens
(Horticulturalist - Golf Data Holdings)

¹ <http://www.steyncity.co.za>



To whom it may concern:

Subject: Zeoplant applications in Montgomerie Links Vietnam golf greens

Montgomerie Link's golf course is being constructed in a harsh beachside environment where there is a 6-7 month dry season where there is no rainfall so our priority was to find a material that would help retain water and nutrients in the green profile during the dry season but not change the hydraulic conductivity of the sand during the wet season.

Zeoplant was chosen because it had been tested and passed USGA soil amendment standards and because it also has an organic component which is beneficial in making golf greens receptive to golf shots in the early stages of golf green construction.

Zeoplant was very easy to apply and did not require any mixing with the green sand before application unlike peat moss which requires pre-mixing before application.

The consumption of irrigation water is approximately 50 - 60% less during the grow-in of the greens compared to other areas of the golf course where Zeoplant has not been used. Once the grass has grown-in the time between applications of irrigation on the greens is 3-4 days compared to daily for non amended soils.

Zeoplant has met our expectations and I would recommend it for use in golf greens.

Sincerely,

A handwritten signature in blue ink, appearing to read 'LWalsh', is written over a faint horizontal line.

Laurie Walsh
Project Manager
IMG Construction Management

Project: Zabeel Palace of H.H. The Chairman of Dubai Municipality
Client: Dubai Municipality, H.H. The Chairman, Sheikh Hamdan bin Rashid Al Maktoum
Contractor: Citiscape LLC

Planting date: 24.12.2008
With Zeoplant & 50% irrigation water reduction



Planting date: 24.12.2008
Without Zeoplant & 100% irrigation



Photo date: 17.01.2009

Project: Zabeel Palace of H.H. The Chairman of Dubai Municipality
Client: Dubai Municipality, H.H. The Chairman, Sheikh Hamdan bin Rashid Al Maktoum
Contractor: Citiscape LLC

Zeoplant application for ground cover area



Photo date: 13.01.2009



Project: Mina Foresight, Abu Dhabi

Client: Royal Group for Sheikh Mohamed Bin Zayed Al Nahyan

Contractor: Gulf Dunes Landscaping & Agriculture

Growth difference in areas with & without Zeoplant

Lower part of the lawn at the photo was planted approx. 12 months ago without Zeoplant indicating pH problems and nutrient deficiency.

The upper part was planted 10 days ago with Zeoplant in the soil mix showing healthier growth.



upper part

lower part

Photo date: 08.07.2010



Company Profile

Zeoplant L.L.C. is a company registered in Abu Dhabi and Dubai and is managed by a German, Ralf Stahl who has 21 years experience in the Gulf region and 25 years professional experience. Zeoplant is involved in numerous major projects in the U.A.E., Qatar, Saudi Arabia, Oman, Kuwait, Bahrain, Iran, South Africa and Australia in consulting, supplying and implementation to environmental friendly and sustainable landscaping & agricultural projects.

The product Zeoplant is a very effective water retaining soil amendment, consisting of fully natural mineral material.

Zeoplant significantly reduces the necessary quantity of irrigation water by 50% because it

- Ties up a high amount of irrigation water and
- Reduces the percolation rate of the irrigation water in the soil
- Reduces the usage of NPK fertilizers drastically by prevention of leaching out
- Improves the soil structure of sandy soils

Zeoplant started its activities in the Gulf in January 2003. During the first year, Zeoplant conducted extensive field trials in the United Arab Emirates and in the Sultanate of Oman in close cooperation with key clients i.e. NAKHEEL, Sorouh, Aldar, Abu Dhabi Municipality, Al Ain Municipality, Agricultural Department of Abu Dhabi, RAK Investment Authority, The Diwan of His Majesty Sultan Qaboos in Muscat and various main contractors.

Zeoplant received the first recognition of their outstanding performance in February 2005 by NAKHEEL, who included Zeoplant in their Landscaping Management Guidelines (tender specifications) from that date.

Zeoplant was chosen by NAKHEEL to supply the iconic The Palm Jumeirah Project for all landscaping applications.

Zeoplant received the approval of Abu Dhabi Municipality and is further registered and approved by Dubai Municipality in the U.A.E. Rayyan Municipality in Qatar, Private Engineering Office of HH The Emir of Qatar and Tehran Municipality in Iran.

Zeoplant is pre-qualified and approved by Masdar, Abu Dhabi – the world's first carbon free city.

Adding to the list of highly prestigious projects, Zeoplant supplied its material to all landscaping areas at Durrat Al Bahrain, the Kingdom's landmark project.

Zeoplant received in September 2005 the approval for the implementation in Golf Courses according ASTM F-1815-97 norm and delivered the product for The Montgomerie Links Golf Course in Vietnam in September 2007.

Today, Zeoplant is an integral part of the technical specifications of the key landscaping & agriculture consultants in the Middle East.

Zeoplant's list of references is growing monthly.

As water is becoming more and more a precious natural resource, the obligation of saving water for irrigation purposes, whether it's treated, desalinated or natural, is an important issue in the design and implementation of all major developments in the region.

Zeoplant combines economical and ecological interests of project owners and developers in a sustainable form.

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