ZeoPro TURF TECHNOLOGY

making great golf courses **EVEN GREATER**

Key Benefits

1. Accelerated grow ins
2. Enhanced germination
3. Lower fertilization requirements
4. Less leach losses of nutrients to groundwater runoff
5. Lower water consumption
6. Improved turf quality and resiliency
7. Vigorous root development

ZeoPro

What ZeoPro does

ZeoPro marketed by Environmental Turf Technology, is the leading soil amendment for high quality turf. ZeoPro helps to produce high quality playing surfaces that are better able to withstand disease, wear and drought. The nutrient and water holding properties reduce budgets and help to protect the environment.

ZeoPro has been tested throughout the world, by leading universities and in use at sporting venues in the most hostile of environments.

ZeoPro is manufactured using a naturally occurring rock, zeolite. Zeolite was originally named in 1756 by Swedish scientist A F Cronstedt, who noticed that when rapidly heated the rock produced large amounts of steam. The steam was produced from water that had been absorbed by the rock. Based on this, he called the material zeolite, from the Greek zéo, meaning “to boil” and líthos, meaning “stone”. These same properties provide turf managers with the ultimate product for reducing water.

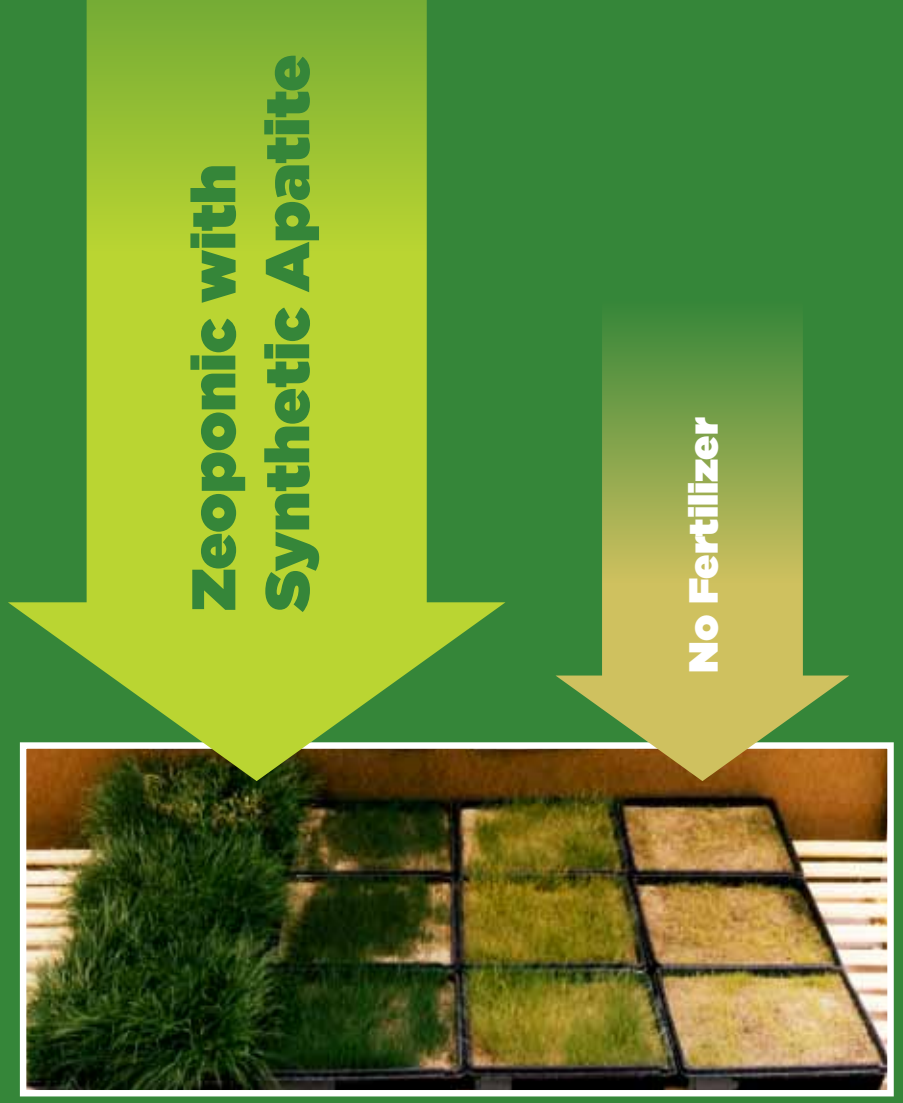
Lower water loss

ZeoPro dramatically reduces water loss through drainage. ZeoPro holds water in micro porous channels, the water is released as it is required by the plant. ZeoPro allows the plant to absorb the water before it drains through the soil. The micro porous channels also provide a reservoir of water that the plant can utilise if the water supply is interrupted either due to drought or lack of available irrigation water.

The use of ZeoPro therefore not only produces better turf it also does it at lower cost with the added environmental benefit of a reduced water requirement.

Lower fertilization requirements

ZeoPro has an extraordinary ability to hold nutrients. The ability to hold nutrient is expressed as the 'cation exchange capacity' (cec). Cation exchange capacity is used as a measure of fertility, nutrient retention capacity and the capacity to protect groundwater from cation contamination. The cation exchange capacity of sand is typically around 2-3, fertile soil around 14-17, ZeoPro has a cec in excess of meg/100 g. This ability to hold nutrients and then deliver them to the plant ensures less leaching of nutrient into the watercourse, so protecting the environment. It also ensures better quality turf as there are fewer 'peaks and troughs' in the nutrient availability. The reduced leaching also reduces the demand for fertiliser as the less the leaching the more it is used by the plant.



Improved turf quality & resilience to disease

ZeoPro has the added advantage of a propensity for potassium amongst the salts. This is a major benefit in the maintenance of high quality turf, as potassium is the primary nutrient that does most to reduce disease in turf. Any reduction in disease clearly leads to better quality playing surfaces as the surfaces are less scarred by the disease, in addition there are substantial financial and environmental advantages in applying less fungicides. The reduced use of fungicides will improve the turf, modern fungicides are very effective; however they frequently kill the beneficial microbes as well as the disease pathogen.

Vigorous root development

The growth of healthy roots is vital to the production of high quality turf, the greater the root mass the greater the plants ability to locate available water and nutrients. This ability not only reduces the need for the application of water and nutrients it also ensures the plant can seek out nutrients and water in the case of interrupted supply. In virtually all sports played on turf it is vital that the turf is firmly anchored, the increased root mass will ensure the turf is better anchored so providing more stable footing for the sportsman. Major trials conducted at Colorado State University showed that root mass increased by up to 500% in 95 days with the use of ZeoPro in newly seeded areas.

“Anything you can add to your management program that will aid you in water savings and water distribution has to be seriously investigated, tried and tested. As stewards of the environment you cannot afford not to.”

CRAIG HALDANE - DIRECTOR, GOLF COURSE MAINTENANCE, DUBAI GOLF

Enhanced germination and grow ins

The value of having facilities that can be used early or on time cannot be under estimated. Loss of green fees, as well as losses of revenue from reduced catering, reduced sales form on site shops, the reduced sale of lessons at golf clubs can amount to staggering amount of money. In addition there is the loss of goodwill from members who cannot use the facilities they have paid for! Research reveals the usefulness of zeoponic material during turf establishment in projects such as new construction and renovation of greens, tees and other high traffic areas on golf courses and sports fields. This research has been conducted at leading research venues such as Colorado State University, Cornell University and Rutgers University, as well as corporate research on Pencross, the Pencross trials were conducted in Illinois. The trials also indicated that the use of fertiliser during the grow in period could be reduced. Trials conducted using both sprigs and seed confirmed the increased speed of establishment.

Improved damage recovery

Extensive on site testing has established that areas treated with ZeoPro recover far more quickly, the damage can be mechanical such as wear caused by excessive use of the surface, or recovery from essential maintenance practices such as aeration. This clearly leads to better playing surfaces and customer satisfaction.

About ZeoPro

NASA combined the words zeolite and hydroponic to create the term zeoponic.

ZeoPro was originally developed by NASA to provide a superior plant growth medium for long-term uses in outer space.

Zeoponic technology relies on carefully selected zeolite, a naturally occurring mineral with microscopic pores. For many years researchers have reported on the benefits of simple zeolite amendments, in water use efficiency, environmental leaching reductions and plant fertility.

Zeoponic technology boosts the benefits of zeolite further by charging the zeolite with plant growth nutrients.

A zeoponic material is one that combines a nutrient ion exchange charged zeolite with nutrients such as phosphates. In effect, zeoponic materials increase nutrient retention and reduce fertiliser requirements by establishing a replenishable and balance nutrient supply in the root zone mix.

> *"Due to the ZeoPro we have been able to considerably cut back water applications"*

MICHAEL CLARKE
GOLF COURSE SUPERINTENDENT,
YAS LINKS, ABU DHABI

Environmental Benefits

The environmental benefits of using ZeoPro start with the harvesting of the raw materials to produce the ZeoPro, unlike peat, zeolite is classified as an infinite resource and its production does no harm to ecosystems which provide a habitat for various creatures. Peat bogs are seen by some scientists to be as important and fragile as rainforests, and that's where the concern lies about the use of peat. Peat harvesting is destroying these fragile, unique and valuable bog ecosystems by removing the peat. Wetland loss due to agriculture and development is a major biodiversity problem worldwide, threatening wildlife habitats. But peat bogs have their own special ecosystem issues and threats. They are home to rare wildlife, including untold numbers of highly specialized native plants, many of which may be endangered and found only in the peat bogs.
In addition the use of ZeoPro is environmentally beneficial as it reduces the requirement for water, an increasingly limited resource as well as fertilisers which can leach into the watercourse. The use of fungicides will also be reduced as the ZeoPro will make increased potassium available to the plant, potassium is beneficial in reducing disease and also in the recovery process from disease.

"Managing our water is without doubt the most important factor to consider when maintaining a facility like Emirates Golf Club"

CRAIG HALDANE
DIRECTOR, GOLF COURSE MAINTENANCE, DUBAI GOLF

"ZeoPro will increase cec, stabilise nutrient retention/release/ availability in the soil"

DAVID BRINKEL
DIRECTOR PRAESTANT

Financial Benefits

There are numerous financial benefits to be gained by the use of ZeoPro, these include reduced water requirement, the rising cost of water makes this a financial saving that will grow rapidly year on year. Reduced fertiliser usage, Denver Broncos Stadium applied around 50% less nitrogen following a reconstruction of the surface using ZeoPro. The reduced use of fungicides is also a major financial saving.

During construction the faster establishment of the turf, with the use of ZeoPro will ensure that the facility can open more quickly providing income.

One of the greatest financial benefits is increased income due to less facility closure, which leads to less loss of sales throughout the facility.

Better surfaces and reduced closing of the facility ensures greater income and greater customer support.

Scientifically tested

Apart from being developed by NASA scientists ZeoPro has been exhaustively tested by leading universities throughout the world, leading commercial laboratories and also most importantly in use in some of the worlds most difficult conditions for the maintenance of high quality surfaces.

These tests have all confirmed that ZeoPro:

- ✔ **Speeds up the establishment of turf**
- ✔ **Reduces the requirement for applied water**
- ✔ **Reduces the amount of fertiliser required to maintain optimum surfaces**
- ✔ **Does not deteriorate when compacted so providing long life for the product**
- ✔ **Retains potassium a beneficial nutrient, rather than sodium**

Using ZeoPro and how to apply it

ZeoPro is a granule with a sand like appearance that can easily be incorporated into the root zone during construction either by premixing with the specified sand or by mixing on site with a rotivator. The incorporation of ZeoPro on existing sites can be done by stripping the turf and then rotivating the ZeoPro with the existing root zone and then relaying the turf. Alternatively equipment such as the Hydroject can be used. The benefit of this form of inclusion in existing turf is that the facilities can continue to be used.

ZeoPro can also be incorporated in a topdressing programme, this will show beneficial results but is a long term project as the ZeoPro should only be mixed at a 5-10% inclusion rate. The reason for the low inclusion rate is that the product works so well that a higher inclusion rate could produce green blotching around the aeration holes as the turf in these areas will be benefitting from better water and nutrient availability.

> *"Astonishing how the grow in and establishment period was accelerated"*

MICHAEL CLARKE - GOLF COURSE SUPERINTENDENT, AS LINKS, ABU DHABI

Why use ETT?

Environmental Turf Technology with ZeoponiX have lead the research into water management and reducing the requirement for water. This research has and continues to cover many areas of this subject and includes working with universities, commercial laboratories, Turf Managers, agronomists and golf course architects many considered to be leaders in their field.

Current research includes: moisture content required in root zone to prevent signs of wilt.

In addition ETT have been involved in helping to provide high quality turf surfaces for thirteen years at many of the worlds leading sporting venues, including European Tour golf venues, Ryder Cup venues, Premiere League soccer stadia.

ZeoPro

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British Columbia Landscaping and Nursery Association

Cooperating & subcontracting universities:
Turf: Colorado State, Rutgers, Cornell, Central Lancashire, Univ. Florida, Texas State Tech, North Carolina State, Missouri, Iowa State, Illinois, Michigan State, California State Polytechnic, Auburn, Ohio State