



**DRAINS  
AND AERATES**  
the 90% of the  
green you don't get  
when you core!

**ROCASTEM**  
LIQUID AERATOR AND ROOT STIMULANT





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Since the inclusion of Rocastem in our aeration program there has been a reduction in invasive mechanical disturbance whilst giving us firmer drier greens that return to play much faster. In one of the wettest periods of weather on record our greens were rarely out of play!

Dave Lowe, Head Greenkeeper, Bawtry Golf Club.

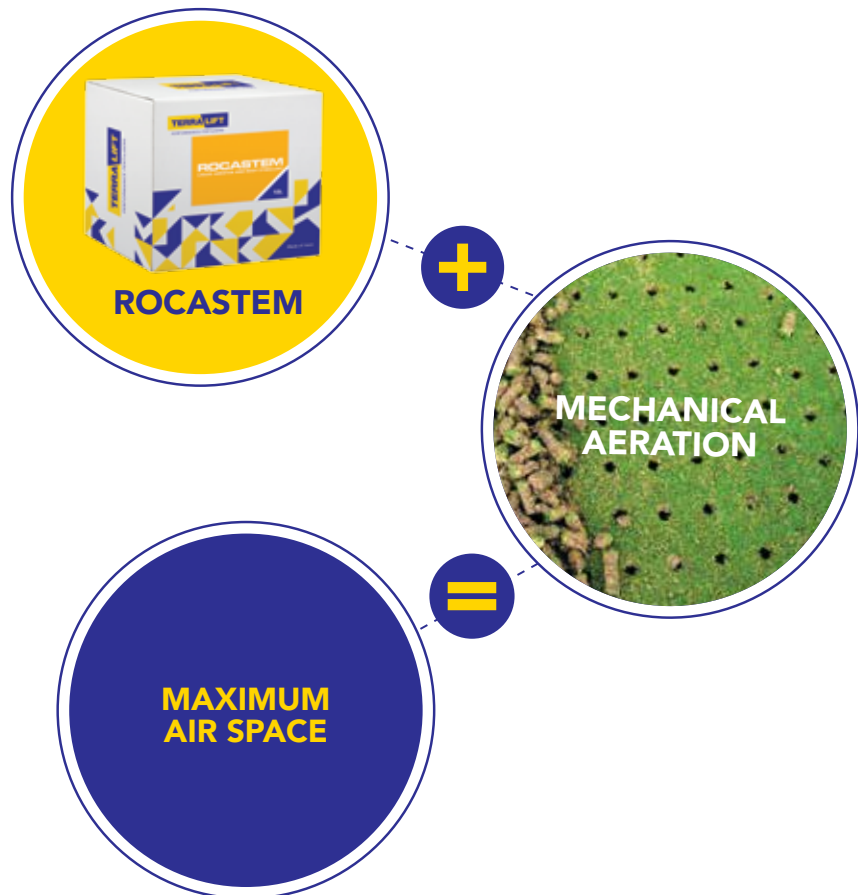
# ROCASTEM

## LIQUID AERATOR AND ROOT STIMULANT

Aeration of the root-zone is essential for better and more consistent playing surfaces. While traditional mechanical actions help, it's worth remembering that coring only targets around 3% of the root-zone with each pass. Rocastem works at microscopic level to hit and help the 90% of the root-zone you won't reach mechanically, adding real value to all your aeration activities throughout the year.

### KEY BENEFITS

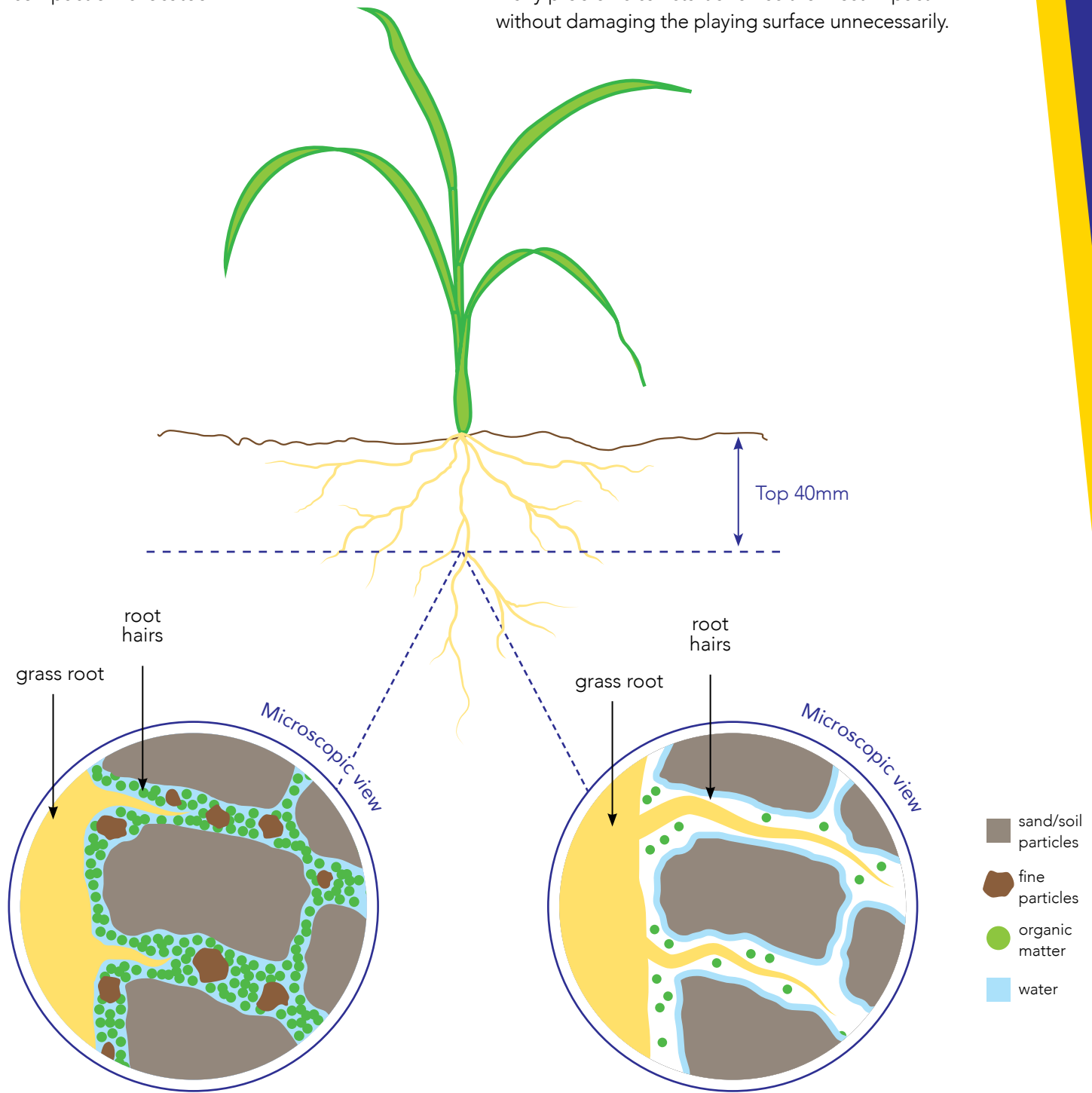
- » Firmer, truer playing surfaces year round
- » Drier warmer greens into Winter and earlier growth into Spring
- » Optimum moisture to air balance in the upper root-zone
- » Root hair stimulation and healthy plant vigour



# TARGETS CRUCIAL TOP ROOT-ZONE

The top 40mm of the root-zone is where all the top-dressing lands, most of the grass growth occurs, all the irrigation water passes through, dust and fertiliser waste sits and where most compaction is located.

Collectively these realities result in an annual clogging of pore spaces, slowing of water movement and reduced air exchange through the upper canopy. Rocastem targets this zone where many problems can start and has the most impact without damaging the playing surface unnecessarily.



## BEFORE ROCASTEM

At microscopic level, compacted root-zones or those with slow water percolation rates are layered with wet organic matter and fine particles clogging available pore spaces.

## AFTER ROCASTEM

Soil pore spaces clear, water percolation increases and air exchange is restored to keep surfaces clear of 'excess' water and root zone air-to-water balance is restored stimulating root hair extension.

# FIRMER, TRUER PLAYING SURFACES YEAR ROUND

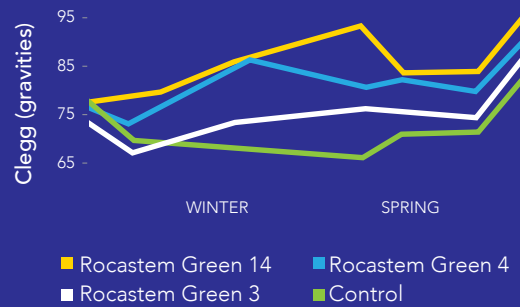
By clearing soil pore spaces, Rocastem increases water infiltration, improves air porosity and removes clogging organic matter so that the air-to-water ratio is balanced and fertiliser and top-dressing materials do not collect near the surface. All of which helps to firm up playing surfaces.

## REVERSES SOIL COMPACTION



Penetrometer readings showed that Rocastem reverses soil compaction by an average of 19.6%.

## FIRMER GREENS SURFACE



Field study research found that surface firmness (Clegg Hammer readings) on Rocastem treated greens improved in mid-winter while the control green softened. In early spring surface firmness increased for all greens and the Rocastem greens improved the most.

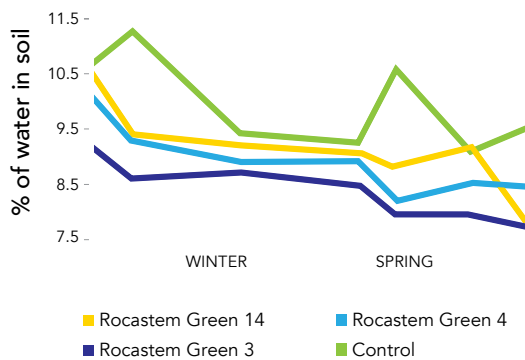


# DRIER WARMER GREENS INTO WINTER AND EARLIER GROWTH INTO SPRING

By keeping water moving through the root-zone in wet months Rocastem helps to maintain soil structure, limit organic matter build up and keep air available in the root-zone. Avoiding such problems as Winter root freeze, ponding and the creation of pathogen friendly root-zones. Surfaces stay drier and importantly warmer for longer into Winter.

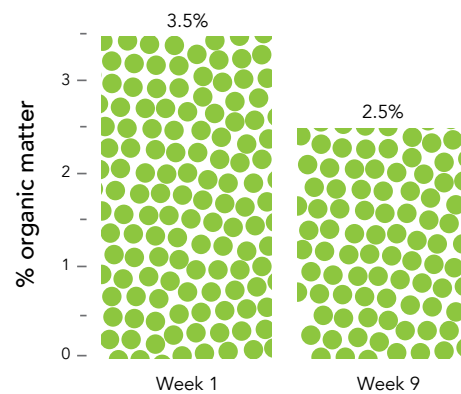
This open profile is also better prepared for when Spring arrives as air and warmth can be transferred to the root-zone faster and the plant will respond with earlier root stimulation and growth.

## DRIER GREENS



Field study research found that soil moisture content in the top 50mm of the soil profile consistently improved on the Rocastem treated greens while the untreated green experienced varying moisture levels and was actually getting wetter in early spring.

## REDUCED ORGANIC MATTER



Bench trials demonstrated the ability of Rocastem to soften and sweeten clogging organic matter and encourage indigenous aerobic microflora to breakdown and consume organic matter.

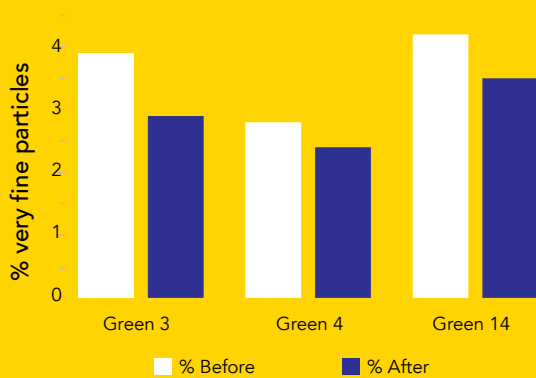


# OPTIMUM MOISTURE TO AIR BALANCE IN THE UPPER ROOT-ZONE

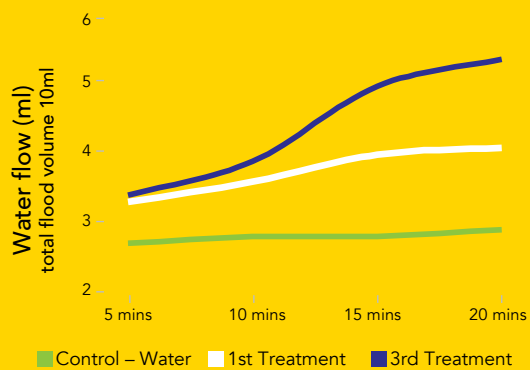
Compacted root-zones or those with slow water percolation are layered with fine particles, sands and soft sticky organic matter, clinging together and filling air space and drainage paths. Excess moisture accumulates forcing oxygen from soil pore spaces interfering with the plant's natural process of respiration.

Rocastem penetrates and flocculates fine particles and opens microscopic drainage paths between the organic matter and large particles of sand and soil. The ionic action of Rocastem ensures optimum moisture to air balance by leaving a film of moisture clinging to the soil particles, allowing excess moisture to drain away and restoring oxygen diffusion right across the upper root-zone.

## MANAGING VERY FINE PARTICLES



## INCREASED WATER PERCOLATION



Field study research found the proportion of very fine particles (under 125 micron) in the top 50mm of the Rocastem treated greens reduced over the course of 5 months. This is a result of the flocculation and organic matter consumption actions of Rocastem freeing these very fine particles to wash below the root zone.

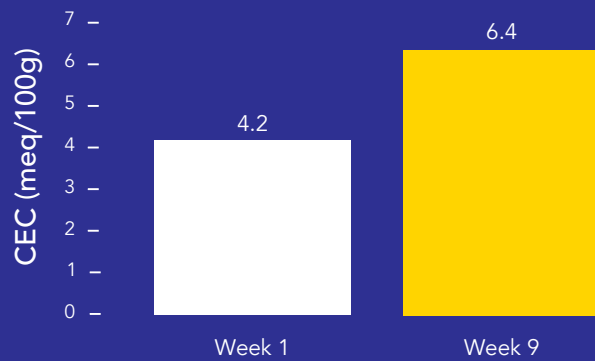
Bench trials on established bentgrass sods demonstrated Rocastem's ability to affect hydraulic conductivity resulting in increased water percolation through the soil with each application.



# ROOT HAIR STIMULATION & HEALTHY PLANT VIGOUR

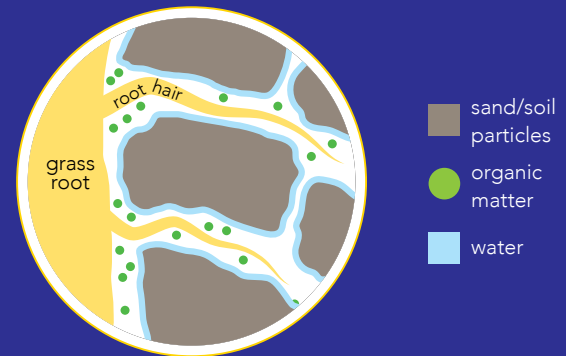
As Rocastem clears soil pore spaces, water percolation increases and root-hairs extend as air is drawn into the root-zone. At the same time Rocastem delivers organic acids and carbohydrates to trigger turf vigour and boost turf colour.

## INCREASED CEC



Bench trials in a sand-soil root zone demonstrated that repeated Rocastem applications increased cation exchange capacity in the soil. This is due to Rocastem's effect on electrostatic composition in the upper root-zone creating more negative charge attachment points for minerals (cations) to be taken up by plant roots.

## ROOT HAIR EXTENSION



Treated with Rocastem, soil pore spaces clear, water percolation increases and root-hairs extend as air is drawn into the root-zone



# ROCASTEM

LIQUID AERATOR AND ROOT STIMULANT

## SEPARATION

The ionic action penetrates and flocculates clays, silts and very fine sands bound onto organic matter. Enzymes and bio-acids reduce organic matter strength.

## DISPERSAL

Indigenous bacteria consume organic matter and very fine particles are free to drain down through the profile.

## THE POWER OF 4 IN 1 ACTIONS ROCASTEM DOES MORE, WORKS MORE

## ROOT HAIR BOOST

Organic acids, carbohydrates and more air stimulate root hairs and trigger plant vigour.

## PERCOLATION

Microscopic drainage pathways clear and excess moisture drains more freely. Air is drawn into the root-zone.

# TURF MANAGEMENT PROGRAMS

## 1. MANAGEMENT PROGRAM

4 to 5 treatments over 4 months / 10L per treatment over 10,000m<sup>2</sup>

The Rocastem management program will add value to your mechanical aeration, whilst boosting turf's ability to combat stress. **Rocastem will re-establish better aeration between core holes and cleanup clogging organic matter for improved water percolation and soil structure across the entire root-zone.** Rocastem results go beyond time of application, in Spring greens will be brought into condition for stressful Summer play and in Autumn greens will be able to carry play longer into Winter.

### Application

- » Apply anytime from early Spring to mid-Winter
- » Apply a minimum of 3 treatments, 3 weeks apart
- » **Best applied in 4 to 5 treatment cycles** commencing at 3-week intervals, expanding to 5-weeks after the third application
- » 1 box (2 x 5lts) treats 10,000m<sup>2</sup> (18 greens)

## 2. INTENSIVE PROGRAM

4 treatments over 1 month (apply weekly) / 10L per treatment over 10,000m<sup>2</sup>

The intensive program will bring heavily clogged greens back into condition quickly. **Particularly useful where Spring is late to start and greens are damp or puddling or coring activity has been delayed.**

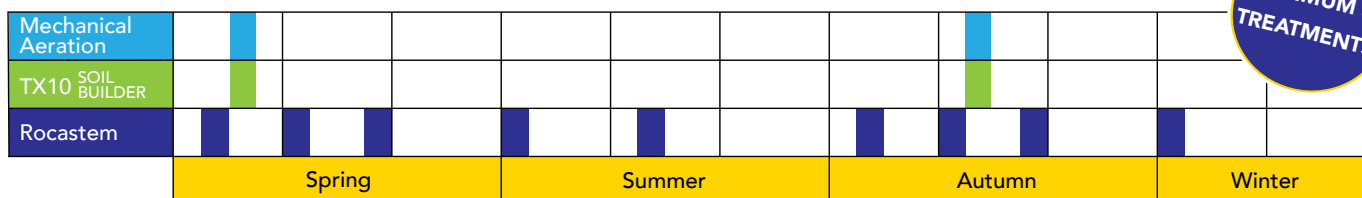
Once green condition has improved, use the Rocastem management program (see guide below) to ensure continued aeration, drainage and plant vigour.

### Mixing

- » Dilution rate 1:25 + litres water
- » May be tank mixed with other nutrient solutions (seaweed, NPK etc.)

### Example Program Guide

Commence treatment cycle anytime during Spring or Autumn



Best applied in 4-5 treatment cycles commencing at 3 week intervals and expanding to 5 weeks after the third application.

## COMPONENTS OF ROCASTEM

- » **Specialised surfactant**  
Designed to separate fine clays from root-zone organic matter and drain held up water.

- » **Microbial foods and pheromones**  
To lift the indigenous microbe population.

PART  
**A**

PART  
**B**

- » **Enzymes and humic fractions**  
To break down and sweeten old, sour organic matter.

- » **Microbially refined amino acids and proteins**  
To trigger plant vigour and stress tolerance.



**ROCASTEM**



**MAXIMUM  
AIR SPACE**

“ Since starting on the Rocastem programme we have seen massive improvements in green firmness even through an exceptionally wet Summer. Rocastem enables us to reduce aeration leading to less disruption to the green surfaces saving us time and enhancing playing quality for our members and visitors.

Nick Wild, Head Greenkeeper, Reddish Vale Golf Club



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