



NEW

**Hicure™**

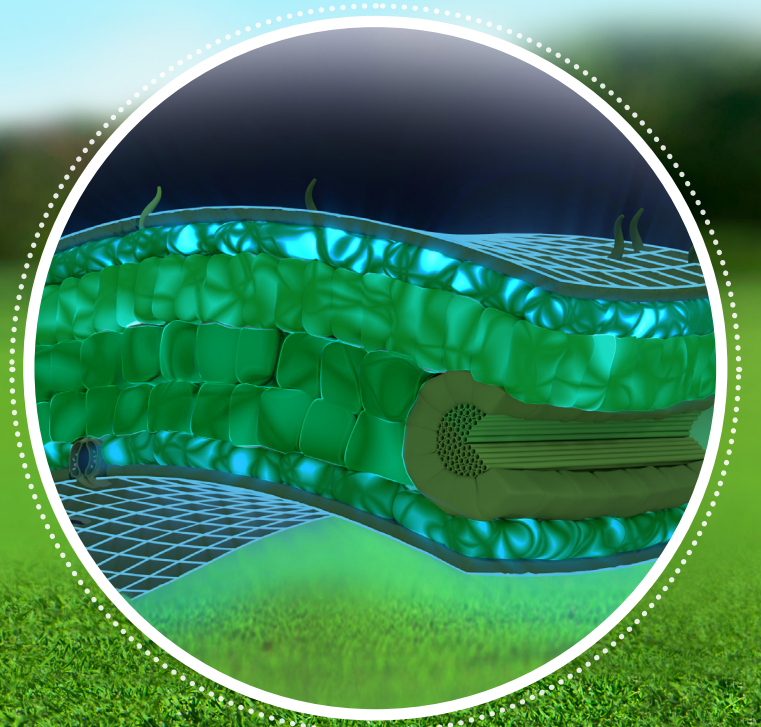
**Turf Biostimulant**

Unique 18 Amino Acid  
Biostimulant formulation

# 1<sup>ST</sup> TURF BIOSTIMULANT FROM SYNGENTA.

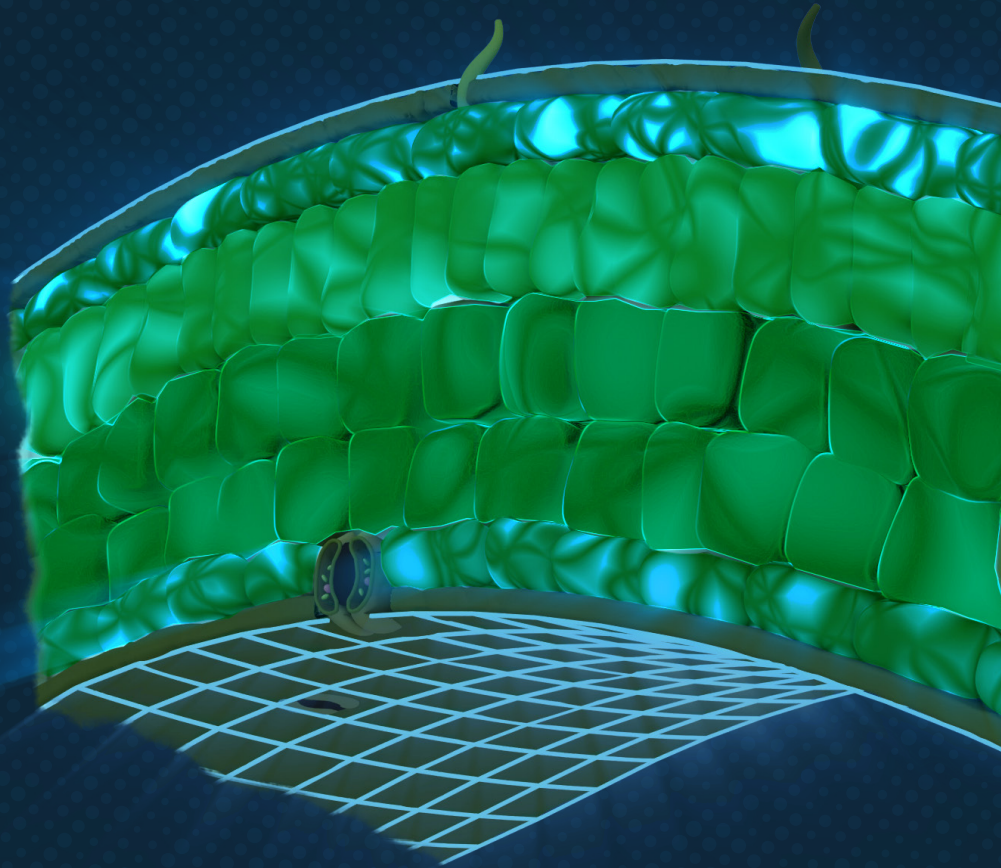
*proven by Syngenta Turf Science:*

- **Builds plant energy to sustain growth**  
—————→
- **Protects and strengthens cells to fight stress**  
—————→
- **Recovers faster from turf damage**

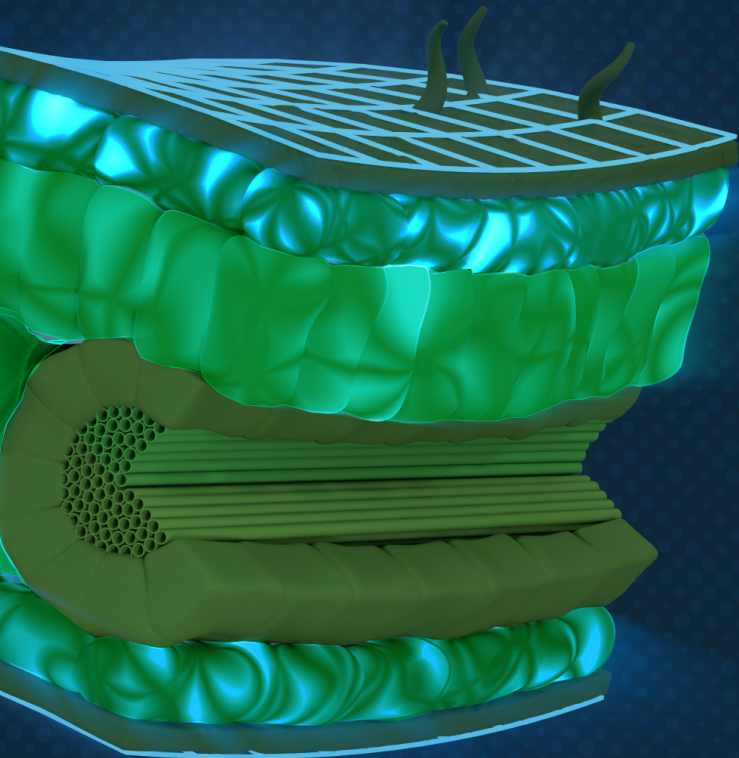


# Hicure builds plant energy and fights stress.

Hicure Turf Biostimulant is a unique formulation of 18 amino acids. Proven by science, Hicure can help sustain balanced growth, density and colour whatever stress or unforeseen challenge you face.







## **Builds plant energy to sustain growth**

- Conserves plant energy lost through N assimilation and protein turnover
- Provides direct source of energy which can be immediately utilized by the plant
- Growth is balanced through supply of a natural and organic source of N

## **Protects and strengthen cells to fight stress**

- Free aminos can rapidly enter the leaf and protect cells
- Hicure strengthens cell walls and delivers osmo - protection to protect against osmotic stress

## **Recovers faster from turf damage**

- Hicure aids recovery from damage and scars
- Improved playability and more consistent surfaces

# Hicure unique formulation.

*proven by Syngenta science*

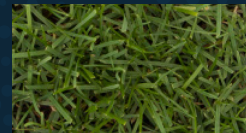
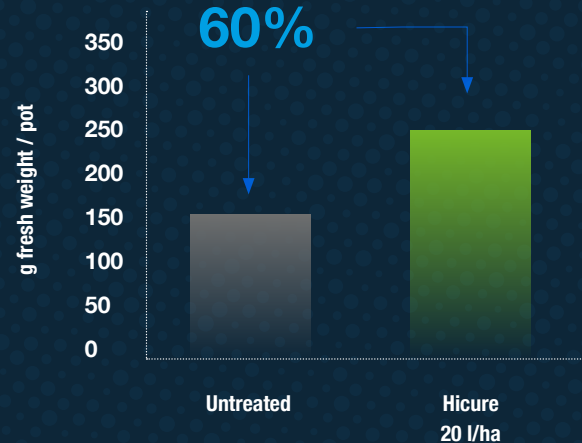
## Proven Performance of Hicure

- 4 years of studies
- 6 turf species: *Agrostis stolonifera*, *Poa annua*, *Lolium perenne*, *Festuca arundinacea*, *Festuca rubra*, *Poa pratensis*
- More than 40 trials studying tolerance or recovery from:
  - Heat stress
  - Drought stress
  - Disease stress
  - Herbicide damage

Build

## Hicure builds energy to increase seedling development.

Perennial rye grass showed 60% boost in seedling development after 3 applications of Hicure.



STRI 2018 - glasshouse study.

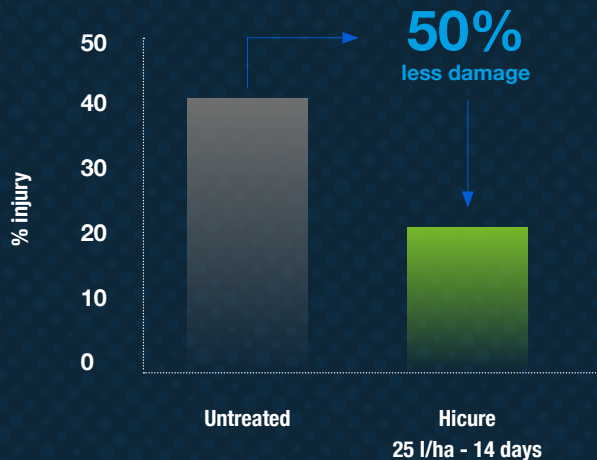
12 days after application



# Protect

## Hicure protects turf from heat stress damage.

Bentgrass showed 50% less damage when pre-treated with Hicure.

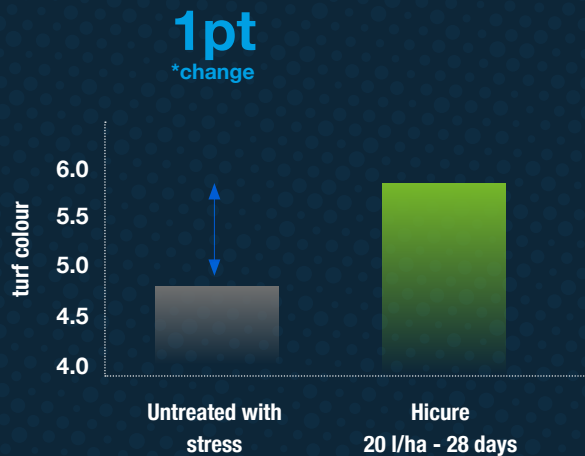


Heat stress 21 - 27° applied to turf, untreated and pre - treated  
Polytechnic University of Valencia

# Recover

## Hicure promoted fast recovery from turf damage.

Bentgrass showed significant recovery benefit when treated with Hicure.



\* 1 pt change (in turf colour indicates significant change)  
Herbicide: used to create stress conditions - Polytechnic University of Valencia

# Inside Hicure.

Hicure is a unique formulation of free amino acids and short and long chain peptides that balance our turfs immediate and long term needs.

## Each Amino Acid plays a key part in turf performance

AMINO ACIDS	ROLE
<b>Proline, hydroxyl proline</b>	<ul style="list-style-type: none"><li>• Acts as an anti oxidant, and protects against damage from free radicals. A strong osmolyte protecting cells from osmotic stress</li></ul>
<b>Glycine</b>	<ul style="list-style-type: none"><li>• Forms glycine betaine, a potent osmolyte providing osmo protection</li><li>• Precursor to chlorophyll production</li></ul>
<b>Glutamic acid</b>	<ul style="list-style-type: none"><li>• Building block of all other amino acids</li><li>• Precursor to chlorophyll</li><li>• Key role in N assimilation</li></ul>
<b>Alanine</b>	<ul style="list-style-type: none"><li>• Alanine is precursor to plant hormones</li><li>• Increases tolerance to drought stress</li></ul>



### Free amino acids:

18 different free amino acids immediately available to the turf to protect cells from stress. These also conserve plant energy by providing an organic N source, thus reducing the requirements for N uptake from soil which is energy demanding.

### Short chain peptides:

Absorbed more slowly and converted into amino acids or proteins as needed over 7 to 10 days. Proteins have many important functions in the plant.

### Long chain peptides:

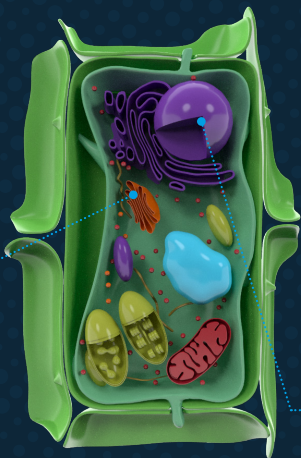
These can be considered as slow-release peptides, extending a positive residual effect on the soil and being absorbed into the plant over a period of weeks.

# Osmo-protection with Hicure.

Hicure contains high strength proline & glycine to strengthen cells and protect against osmotic stress caused by heat, drought and ice formation.

## With Hicure

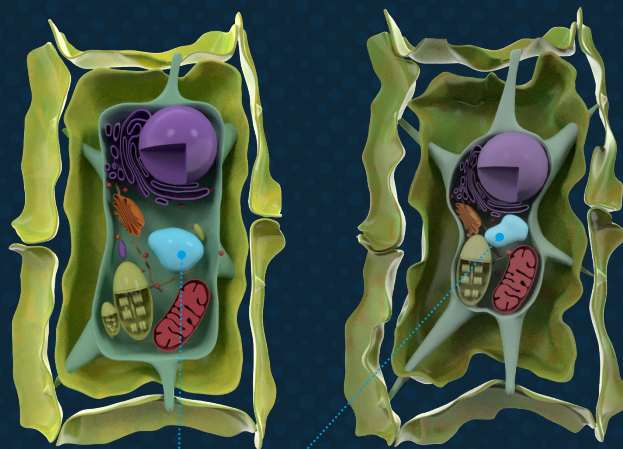
**Proline** amino-acid strengthens plasma membrane and helps maintains turgor



**TURGOR PRESSURE** is the force within the cell that pushes the plasma membrane against the cell wall

Proline and glycine act as osmolytes to maintain osmotic potential

## Without Hicure



Drought, heat and ice formation increases salt concentration and draws water out















# Year-round performance with Hicure.

Hicure can be used year-round to improve autumn and winter quality, enhance spring recovery and pre-summer for pre-stress conditioning.

*Turf faces tough challenges right through the year.*

Environmental impacts of weather are compounded by the rigours of essential everyday management along with the wear and damage caused by play.

Spring	 Over winter damage	 Low energy reserves	 Low pigment levels
Summer	 Drought/drying winds	 Light and heat	 Shorter HOC decline in root mass and high wear
Autumn	 Slowing but variable growth	 Less photosynthesis	 Lower nutritional inputs
Winter	 Slow/no growth	 Low photosynthesis/depleting energy	 Frost damage

# When to apply Hicure.

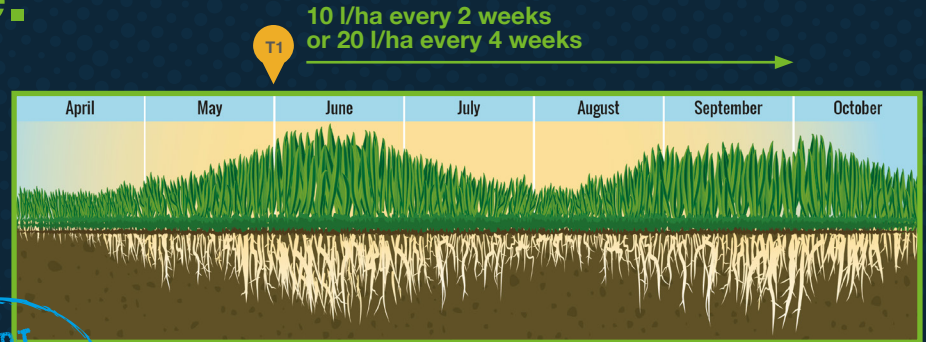
Apply during active turf growth before stress appears.

Spring - recover from winter stress. Build conditioning to help get the optimum playing surface earlier.

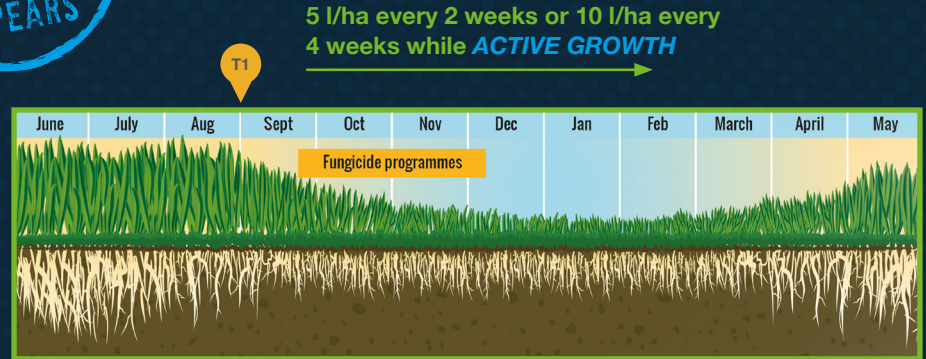
Summer - maintain playability. Prevent summer stress from heat and drought. Sustain turf quality during stressful summer conditions.

Hicure can dovetail perfectly with regular summer Primo Maxx II conditioning programmes.

Autumn - prepare for winter and manage through cold/frost and low light stress conditions.



START  
BEFORE  
STRESS  
APPEARS





# Build Protect Recover

*(photo credit)* **Graeme Roberts**  
Royal Portrush - 8th green looking out to White Rocks and Islay



# Guidelines for optimum results.

- » *Use in programmes every two to four weeks, start before stress expected*
- » *Use higher rates for monthly intervals and when conditions are more challenging*
- » *Tank mix with Primo Maxx II in spring - summer*
- » *Can be tank mixed with fungicides if required*
- » *Apply in 200-400 litres of water per hectare*
- » *Maintain good ITM practices, including aeration & nutrition*



# New Hicure conditions turf to perform through difficult times, recover faster and more effectively.

Build your turf's natural energy and protect against stress:

- *Improve turf quality*
- *Increase turf density*
- *Enhance colour*
- *Recover from damage*

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(photo credit) **Charlie Lacey - Camberley Heath Golf Club**

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