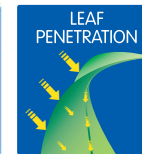




FACTFILE

Mosquito – Liquid Iron Concentrate



Mosquito is a highly concentrated liquid Iron solution, designed to achieve rapid and economical application to all turf areas. Produces a rapid, uniform green-up, corrects Iron deficiency and promotes plant vigour.

Application Considerations

Applied at any time of year, including winter, to all sports areas and amenity turf, providing the turf is not under stress conditions, e.g. drought or frost. The high specific gravity and concentrated formula enables a significant amount of Iron (Fe) to be available from a liquid application.

Note: Care should be taken where moss is present in a sward as applications of Mosquito, whilst being beneficial to turf, will blacken moss. Any moss that turns black should be scarified out and over-seeding will re-establish a conditioned sward.

Application Rate	Water Volume	Area
45 litres	400-500 litres	1 hectare

Why grass plants require Iron (Fe)

Iron is used in the production of chlorophyll, the 'factory' in the plants leaves that convert carbon dioxide and water into sugars (energy), by using sunlight as a fuel source. Without chlorophyll, plant growth is limited resulting in a poor sward.

Limitation of Iron in the root zone

Most indigenous soils have relatively high quantities of Iron, however it predominantly exists in the form of Fe^{3+} , which is not readily available to the plant. The more soluble and biologically significant to plants Fe^{2+} , is easily oxidized to Fe^{3+} , which then precipitates in the soil and is no longer accessible for the plant. The pH of a soil also plays a significant part in Iron availability. Where soils are neutral and above (alkaline) Iron becomes unavailable to the plant and in these types of soil, Iron will readily combine with Phosphates, Carbonates, Calcium and Magnesium rendering it inaccessible to the plant.

Iron uptake by plants

Plants can use a number of mechanisms to assist in the uptake of Iron. They can release a compound in combination with microbial activity called siderophores, which operate a natural chelation mechanism that allows the plant to obtain the Iron.

Plants are also able to release the protons (H^+) through their root systems to lower the pH of the rootzone. This is done at a very localised level round the rhizosphere, resulting in increased Iron solubility.

New roots and root hairs are the most effective parts of the root system for the uptake of Iron, so it is essential to maintain a healthy and active root system. Poor rooting and or factors that inhibit root development will interfere with Iron uptake.

Iron in relationship to other nutrients

When choosing other fertilizer applications it is worthwhile noting that Ammonium Nitrogen increases the proton release by roots, which in turn helps in the uptake of Iron because of the localised lowering of soil pH.

Conversely Nitrate Nitrogen increases the pH by enhancing the release of hydroxide ions, this will lead to inefficient Iron uptake. Other nutrients such as Phosphorus and Calcium can precipitate Iron out of solution and other trace elements can be antagonistic to Iron.



Managing Iron applications on turf

The key to successful use of Iron applications is knowing the prevailing soil conditions in terms of pH which will help to assess the likely availability of Iron to the turf plants and, which type of Iron to apply.

Other environmental and management influences need to be considered:-

- * **Plant health** – turf in good condition and growing will be producing plant sugars and in turn will be releasing protons(H+) into the rhizosphere, subsequently lowering pH near the roots allowing Iron to be more soluble.
- * **Microbial stimulation** – some of the exudates (plant sugars) being released in to the soil will be stimulating a healthy and diverse microbial population, which will in turn assist the plant in the production of siderophores that enhance Iron availability.
- * **Applications** – liquid Irons readily in solutions are more appropriate than dry applications where the pH will effectively invalidate Iron applications and the liquid solution will be more instantly available for plant uptake.
- * **Nitrogen applications** – where there is an issue of pH restricting Iron uptake, if possible use Ammonium Nitrogen rather than Nitrate Nitrogen.
- * **Soil pH** – a measure of acidity/alkalinity, a value of 7 being neutral, <7 is classed as acidic and >7 is alkaline.

If the pH is having a persistent and detrimental effect on Iron uptake, consider using Chelated Iron products or Complexed Iron materials, which will protect the Iron from the influence of higher pH conditions.

Range of Chelating and Complexing agents:

- * **EDTA** – 100% effective up to a pH of circa 6.5, reducing to approximately 5% effective by pH 8.0. Not effective above pH 9.3
- * **DPTA** – 100% effective up to pH of circa 7.0, reducing to approximately 30% effective by pH 8.0, progressively reducing to 5% effective by pH 10.0
- * **EDDHA** – 100% effective at all pH ranges 4.0 to 10.0
- * **Amino Acids** – 10% effective between pH 4.0 and 6.5
- * **Citrates** – 15% effective between pH 4.0 and 7.5

Product Detail

Contains	10% Fe
Pack Size	15 litres (sufficient to treat 3,333 sq.m)
Product Code	0115237/015
Specific Gravity	1.5



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