



Ciba® SoilFix® IR – Soil Conditioner Soil Application in Brazil

Introduction

SoilFix® IR polymers have the ability to improve soil water management, increase lateral and vertical movement (humid bulb formation) and reduce evaporative losses. These benefits increase the efficiency of water and nutrient usage by crops. The key point is to always apply SoilFix® IR using simple methods that do not change the pre-existing irrigation systems. This enables the product to be used in any kind of agro markets and by any customer.

The Brazilian Experience

During 2006, Ciba introduced SoilFix® IR to the Brazilian semi arid region of Petrolina in Pernambuco State and Juazeiro in Bahia State. This region is an important fruit production area with more than 30,000 ha of mango and 20,000 ha of table grapes, 100% irrigated (drip and micro sprinkler irrigation). This region has extremely poor sandy soils (low nutrients and organic matter content). Climatic conditions are severe with high light exposure and intensity, and rainfall below 500 mm per year. Therefore, crops need irrigation all year round. Table grapes use more than 11,500,000 litres of water/season/ha, so water management is a key focus.

Irrigation systems are sometimes oversized to compensate for the hard conditions, promoting water and nutrient losses. Farmers are looking for equipment or products to help avoid these problems. In the past, other companies have tried to introduce superabsorbent polymers without success because the application technology was not appropriate.

After evaluation of the existing irrigation system and using Ciba's expertise from other countries, a simple way to apply SoilFix® IR polymers was proposed without changing the traditional fertigation systems and pumps (see picture 1).

Ciba® SoilFix® Effects

- Irrigation water is used more efficiently.
- Erosion is reduced by up to 95%.
- Soil bound pesticides are retained in the field.
- Soil applied fertilizer utilization is markedly improved.
- Significant yield and quality improvements have been recorded.

Ciba® SoilFix® Features

- SoilFix® can be applied in all cropping situations as is not phytotoxic.
- SoilFix® can be used in almost every irrigation system, due to the different formulations available (IR and LDP) and specialized application devices provided by Ciba.
- SoilFix® is environmental friendly as it is not leached. It is harmless for humans and animals and is biodegradable.

Most farmers have typical fertilizer injection systems that use A and B tanks and direct injection into the irrigation pipes. The SoilFix® IR powder formulation was mixed with water in the tanks not exceeding the maximum dosage of 40g/1000 litres (Ciba's recommendation). This is the limit water viscosity for dosage for conventional pumps to inject SoilFix® IR into the pipeline.

In order to mix the polymer, small quantities were slowly sprinkled above the water surface with intense agitation while the tank was filled (see Picture 2). After this, the polymer solution was injected using a normal pump (Picture 3) obeying the irrigation schedule. The dosage used for sand soils in this region is about 8 kg/ha/season. The polymer was mixed with traditional fertilizers such as calcium nitrate, potassium nitrate, sulphates and Ciba® LIBREL® chelates without any problems. Ciba does not recommend mixing with products that contain amino acids or any kind of organic matter to avoid flocculation.

Results & Benefits

The rapid introduction of the product to the market was facilitated by the simple application method and the ability to use standard farming practice. There has been a high interest from farmers and technicians in using these polymers due to the low application rates compared to other treatments, resulting in a high level of repeat sales.

In these trials, the application of SoilFix® IR resulted in a saving of 80% of the water consumption and associated electricity costs without adversely affecting the quality of the crop measured by the BRIX index, or the yield. Evaluations of fertilizer savings and crop yield are ongoing.

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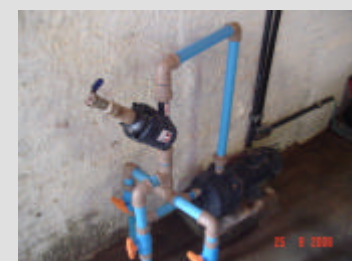
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Picture 1: Typical fertigation facilities in Brazil



Picture 2: Mixing process



Picture 3: Small pump used to inject polymer