FLOBOND

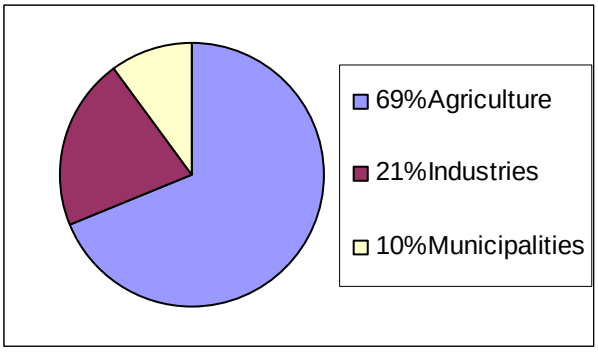
Water Savings for Agriculture

SNF FLOERGER®

Agriculture is the prime user of water on the planet. 70% of the world's available soft water is used for irrigation. From the 3 600 km^3 of water extracted each year, roughly two thirds are consumed by evaporation, plant sweating as well as by runoff and ground infiltration without any use for the plants.

Agriculture has already implemented many changes in order to use less water and preserve this endangered resource.

Among these techniques the use of polyacrylamides in irrigation allows to save up to 30% water.

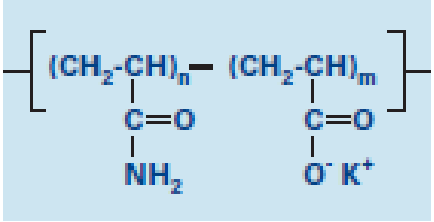


FLOBOND COMPOSITION *Soil Conditioner*

FLOBOND ***TM*** is a range of organic soil conditioners based on polyacrylamide (PAM).

These are water soluble anionic polymers of high molecular mass. Their characteristics : high molecular weight, anionic and water-soluble makes them very efficient as soil conditioners.

FLOBOND ***TM*** products make it possible to reduce the soil erosion caused by surface water runoff and to enhance the permeability of the soil.



MOD DE ACTIUNE *A few Drops is Enough*

FLOBOND ***TM*** enables the agglomeration of the fine particles of soil, which would otherwise be carried away by surface water runoff.

When the PAM dissolves in water, dissociation of the potassium ion exposes a negative site on the molecule at which the colloidal soil particles will be attached (the ratio n/m ranges from 0 to 100 and indicates the anionicity of the PAM).

Depending on the type of soil and the method of irrigation, ***FLOBOND*** ***TM*** increases the amount of water available to the roots while lowering the overall consumption of water needed for irrigation.

Water runoff, erosion and lixiviation are strongly reduced, increasing savings in completion products such as fertilizers and other agricultural additives.

FLOBOND keeps water near the roots

USAGE

All products in the ***FLOBOND*** ***TM*** range are of very high viscosity in water. Simple injection in the water flow or slow dilution of tablets allows just a few mg/l ***FLOBOND*** ***TM*** to viscosify the water.

It will then form aggregates of fine particles on the soil's upper level where roots are formed. These aggregates will change the soil's porosity and enhance the water retention.

Slowly pour the product into the irrigation water. Gentle stirring prevents the particles agglomerating. The greater the temperature of the water, the faster the product will dissolve. Pressurise the system before injection. A non-return valve is requiered on the injection system.

If the product is spilt, pick up the product with a shovel or by suction. After cleaning, flush away any traces with water.
To clean equipment, blow away powder traces with compressed air.

Avoid contact with thw skin and eyes (the use of gloves and goggles is recommended). For powders it is recommended to wear an anti-dust mask.

For further information, consult the ***Material Safety Data Sheets*** (*MSDS*).

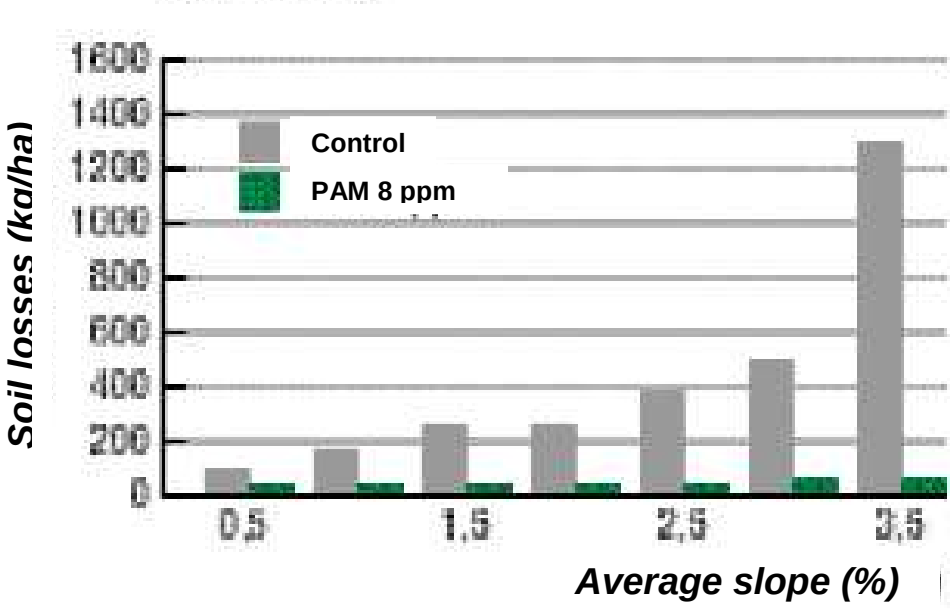
IMPLEMENTATION *Powders, Emulsions or Tablets*

FLOBOND ***TM*** exists in different forms, powder, emulsion and tablets. For every existing irrigation system, ***SNF*** has the most efficient, safe and simple application equipment.

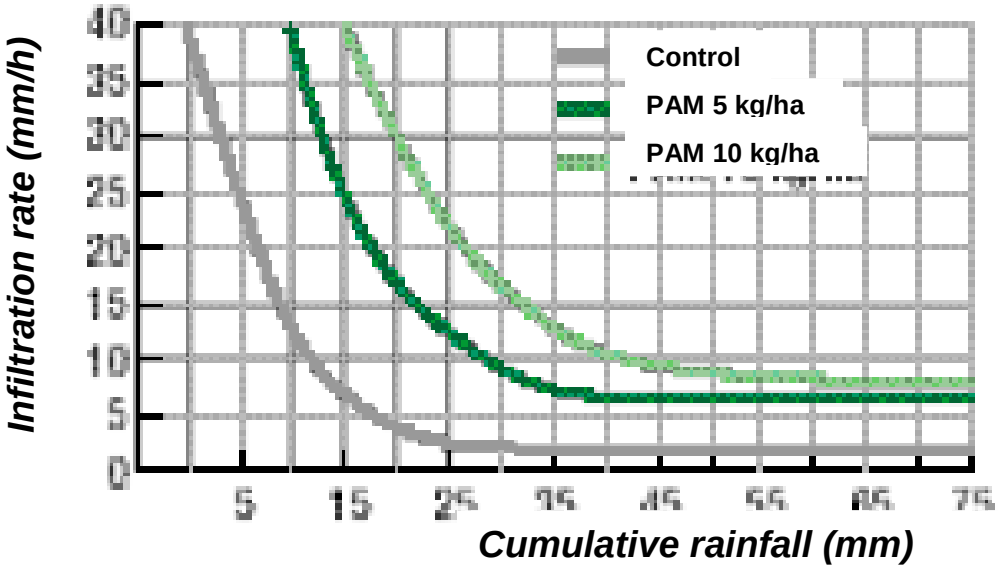
RESULTS *Save up to 30% Water*

Under most irrigation conditions a third of the water loss is due to water run-off and lixiviation. Numerous independent studies and full-field tests using polyacrylamides, mainly in Australia and the USA, have demonstrated that the same production is reached while irrigating less frequently and using less water each time. ***FLOBOND*** ***TM*** also lowers the losses by lixiviation of nutritional elements ; these will be stored in the rooting zone before being used by the plants.

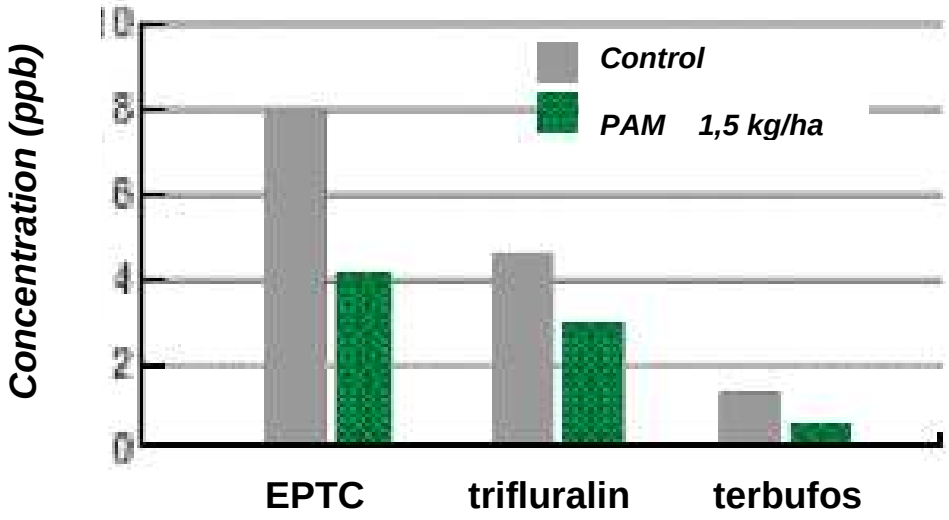
Soil losses by irrigation as a function of terrain slope



Rate of infiltration of loamy soil, as a function of cumulative rainfall

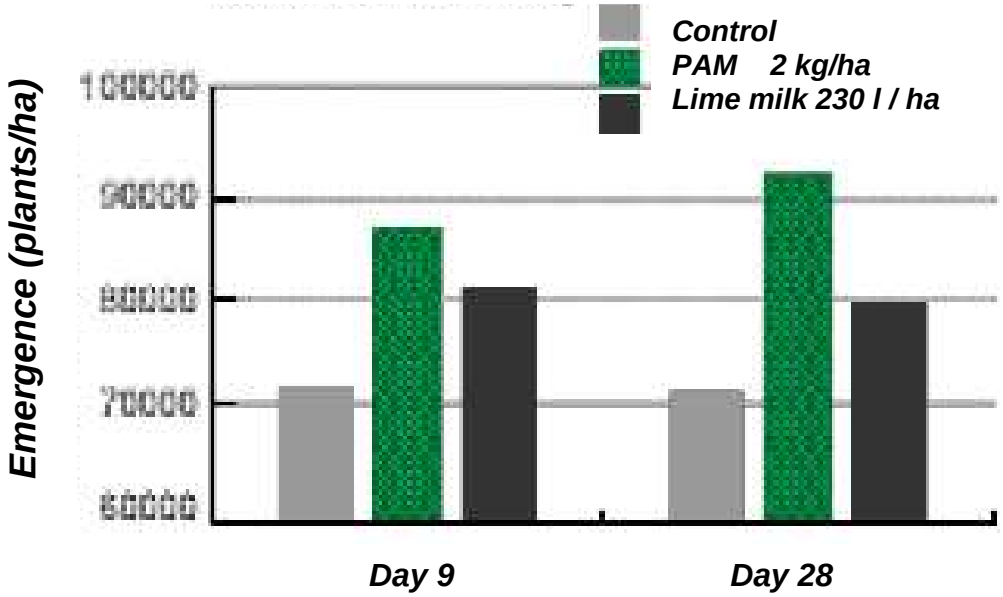


Concentration of various pesticides in the runoff water at the field outlet



EPTC = S-Ethyl Dipropylcarbamothioate (C9H19NOS)

Emergence of beet plants from a soil sensitive to crusting



ADVANTAGES

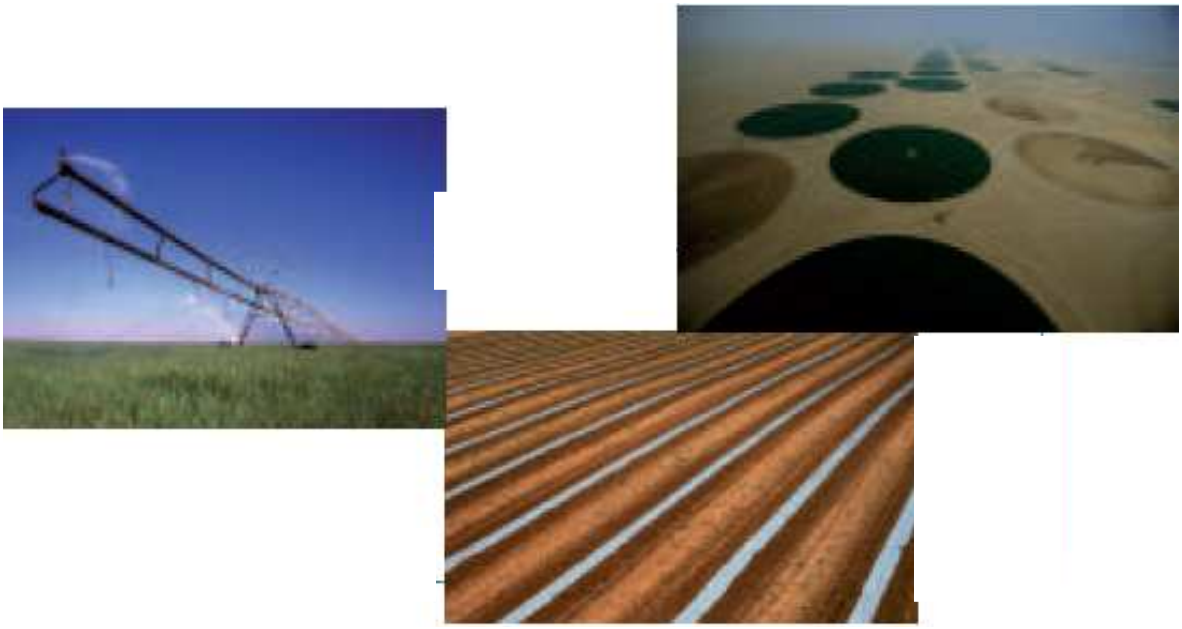
FLOBOND ^{TM} increases the cohesion of poorly structured soils, so that less sediment is entrained by water runoff. The result : an average reduction of 95% in erosion.
The porosity of the soil is also conserved, so maintaining excellent infiltration of the soil by water (+35% on clay-loam soils to +50% on clay soils).
FLOBOND ^{TM} also considerably reduces the leaching of nutrients (e.g. : 84% less for phosphates and nitrates) and pesticides in the runoff waters (e.g. atrazine, trifluralin).
FLOBOND ^{TM} brings about an improvement in germination rate by up to 35% for plants sensitive to soil crusting (e.g. : beet and vegetable crops).

ENVIRONMENT *Low Impact*

FLOBOND ^{TM} naturally breaks down in soils under the action of UV radiations and microbiological attacks to form water, CO_2 and ammonium nitrate. Soil bacteria consume the nitrogen group of the molecule rapidly. The carbon group breaks down by approximately 10 – 15 % per annum depending on UV intensity.

The concentration of the product in the runoff waters is zero 30 minutes after the end of application.
The duration of field efficacy of ***FLOBOND*** ^{TM} varies from 4 to 8 weeks, depending on the agro-climatic conditions.

No toxicity has been found in water or soil. The product is approved in the USA (***US FDA = Food & Drugs Administration***) and in France (***Le Ministere de la sante = French Ministry of Health***) as a drinking water and wastewater treatment additive.



SNF FLOERGER®

SNF S.A.

Zac de Milieux, 42163, Andrezieux Cedex, France
Telefon : +33 (0)4 77 36 86 00
Fax: +33 (0)4 77 36 86 00
E-mail : info@snf.fr
www.snf-group.com

Flochem Romania

Str. Mihail Cioranu 4, sector 5, Bucuresti
Telefon : 021 410 78 09
0744 567 466
0744 425 079
Fax : 021 410 30 26
E-mail : flochem@floerger.ro
office@snf.ro
www.snf.ro