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Super absorbent polymer





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Description

SAP is a new functional material with good water absorption and water holding capacity. As a Eco-friendly material, it is totally non-toxic, harmless and nonpolluting.

- SAP can absorb pure water up to hundreds times its weight and turn to water gel.

- The main uses of SAP are absorbing, retaining or to block liquid, it can absorb & release repeatedly .



This absorbent act as a reservoir of water and will only use the reserved resource at the time of need, allowing a better agricultural yield. Super Absorbent Polymers have a unique mechanism to absorb and retain water; discharging it only when the crop demands for it otherwise it does not lose out on the moisture level.



Super Absorbent Polymer for Agriculture

SAP for agriculture use is **potassium based**, It has the capability of holding water up to 400 - 600 times its own weight, helping dry or rainfed states hold water for a longer period of time, minimizing irrigation frequency. When mixed with soil and sown at the roots of a plant, it spares 65 – 95% of water utilized.

It was created to develop farming in extreme climates, whether excessively hot, excessively parched. It assists with: dry season, desertification, poor soil quality, rather than day by day watering, Super Absorbent Polymers permit watering once per week, sparing time, money, and water.



- Super absorbent polymer for Agriculture can assimilate and hold a great degree of water in respect to their own particular mass. Water-retaining polymers, which are delegated hydrogels when cross-connected, absorb fluids through hydrogen bonding with water. A SAP's capacity to retain water is an element of the ionic concentration of the watery arrangement.
- Super Absorbent Polymer for Agriculture is effective for water utilization in agricultural and horticultural crops in areas with little or negligible amount of rainfall and under limited irrigation conditions. It offers huge economic viability to cultivations and is a boon to dry states and the future generation of farming.



Super Absorbent polymers (SAP) are a system of polymer chains hydrophilic in nature with water as the dispersion medium. **Hydrogel polymer is capable of storing more than 90% water** and has a level of adaptability same as natural tissues, because of their huge water content.

SAP is a water absorption agent that once added to soil or substrate will absorb and hold vast amounts of water and supplements, nearly up to 600 times of its own particular weight. Hydrogel polymers formed through cross linking polymer chains (physical, ionic or shared bonding) and are well known for their ability to absorb water. Hydrogels are mostly homogeneous in nature. Super Absorbent Polymers, which are delegated hydrogels, retain watery arrangements through hydrogen bonding with water atoms.



Potassium Polyacrylate is a polymer of a potassium cation and acrylamide with an Absorption Capacity Index in the scope of 30-100. This polyacrylate helps in the germination of seedlings, with plants or for transportation of plants or seedlings.

Absorption Capacity Index (ACI) is defined as (weight of water saturated gel polymer minus dry weight of the polymer) / polymer dry weight.



Why Potassium Polyacrylate?

Amid dry periods, sodium polyacrylate has a tendency to gather and form cross links that repress re-swelling when it is re-wetted. With a limited number of wet/dry cycles, sodium polyacrylate hinders plant development. This inhibition emerges because sodium particles in the sodium polyacrylate system are easily replaceable and these particles are absorbed by the soil particles or have a tendency of exchange with the cations on the surface of plant roots. The result is a condition that is different from an alkaline soil, which tends to affect and inhibit plant growth and soil hardening.



Features & Benefits

- Hydrogel Polymer increases the water retention capacity of the soil
- Effectively reduces **irrigation frequency**
- It limits water and nutrient loss through soil leaching
- Hydrogel Agriculture reduces **evaporation rate** preventing water loss
- It improves the physical properties of the soil by enhancing aeration
- Hydrogel usage reduces water stress when mixed with a substrate



- Enhances plant growth by providing water and nutrients right at the root zone of the plants, reducing wastage
- Reduces erosion and water runoff
- Enhances plant performance, especially in arid areas
- Protects the environment against **drought** and groundwater contamination
- Acts as an insulating material for plant roots in frosty winter conditions
- Reduces **fertilizer usage** by 15 - 30%
- Increase output & profits obviously, increase crops and fruit yield 20-40%.



Dosage & Application

Types	Dosage	Application method
For potted flowers (pot diameter)		
10-15cm	2-4g/pot	Mix SAP even with soil, put in pot for planting or transplanting, water thoroughly
15-20cm	4-8g/pot	
25-30cm	9-10g/pot	
30-35cm	12-15g/pot	
35-50cm	17-25g/pot	
For flowerbed		
1 m ² (2.5cm depth)	50g	Mix SAP even with nutritious soil, water thoroughly.
1 m ² (7.5cm depth)	80g	
1 m ² (15cm depth)	150g	



For different soils

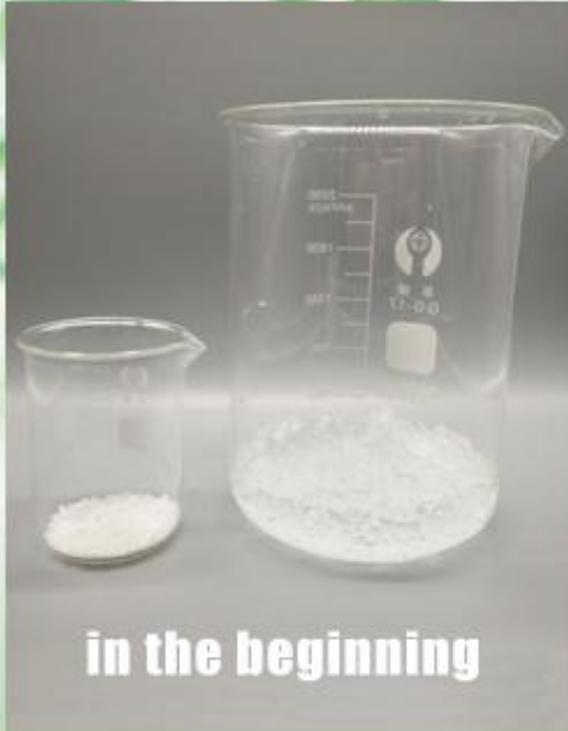
Lawn (sandy soil)	100-150g/m ²	Dosage varies to the soil condition, broadcasting in the earth's surface, use disc harrow or rotary cultivator to mix SAP with soil, depth is around 15 to 25 cm, according to the conventional method after sowing or planting grass, irrigate, make SAP fully absorbed water.
Loam soil	50-100g/m ²	
Sticky soil	30-70g/m ²	

For Crops, vegetables & trees

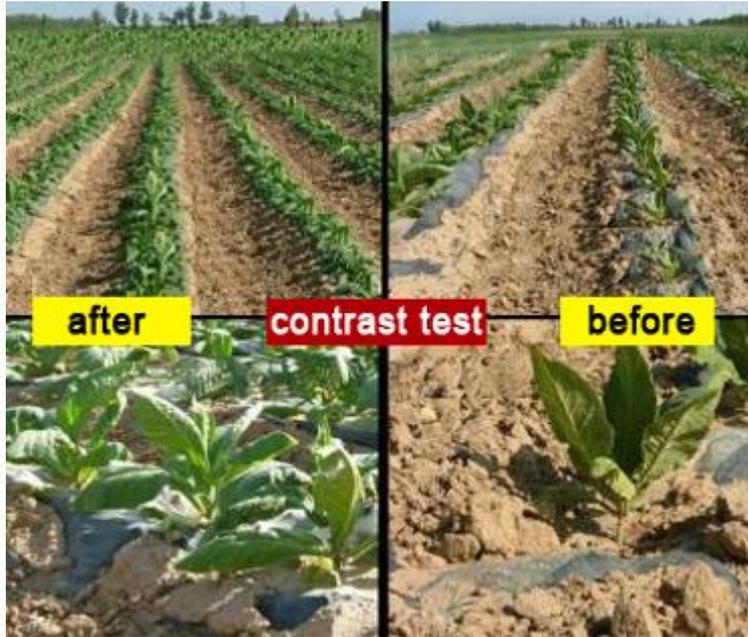
Corn, soy bean, peanut	22.5~30kgs/ha.	mix SAP with fine soil, throw even into the planting furrow or planting cave, after sowing, watering, then filled with soil to ditch point
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Vegetables	30~37.5kg/ha	mix SAP with fine soil, throw even into furrow or cave, watering, then filled with soil to ditch point
Grapes, melons	45~75kg/ha	mix SAP with fine soil, throw even into the planting furrow or planting cave, after sowing, watering, then filled with soil to ditch point
Fruit tree (young)	50-80g/tree	Subject to the tree crown projection, dig a circular ditch along the edge of projection, depth is subject to the expose part of the root. put SAP into soil 10CM away from the ditch, watering, then filled with soil to ditch point. Or dig a strip pit of 10~15cm along the edge of projection, depth is subject to the expose part of the root, with pits distance of 50~60cm. put SAP into soil 10CM away from the ditch, watering thoroughly, then filled with soil to ditch point. If for basal application of fertilizer at the same time, fertilizer placed on top of SAP, fertilizer and SAP separated by soil
For adult tree	100-150g/tree	

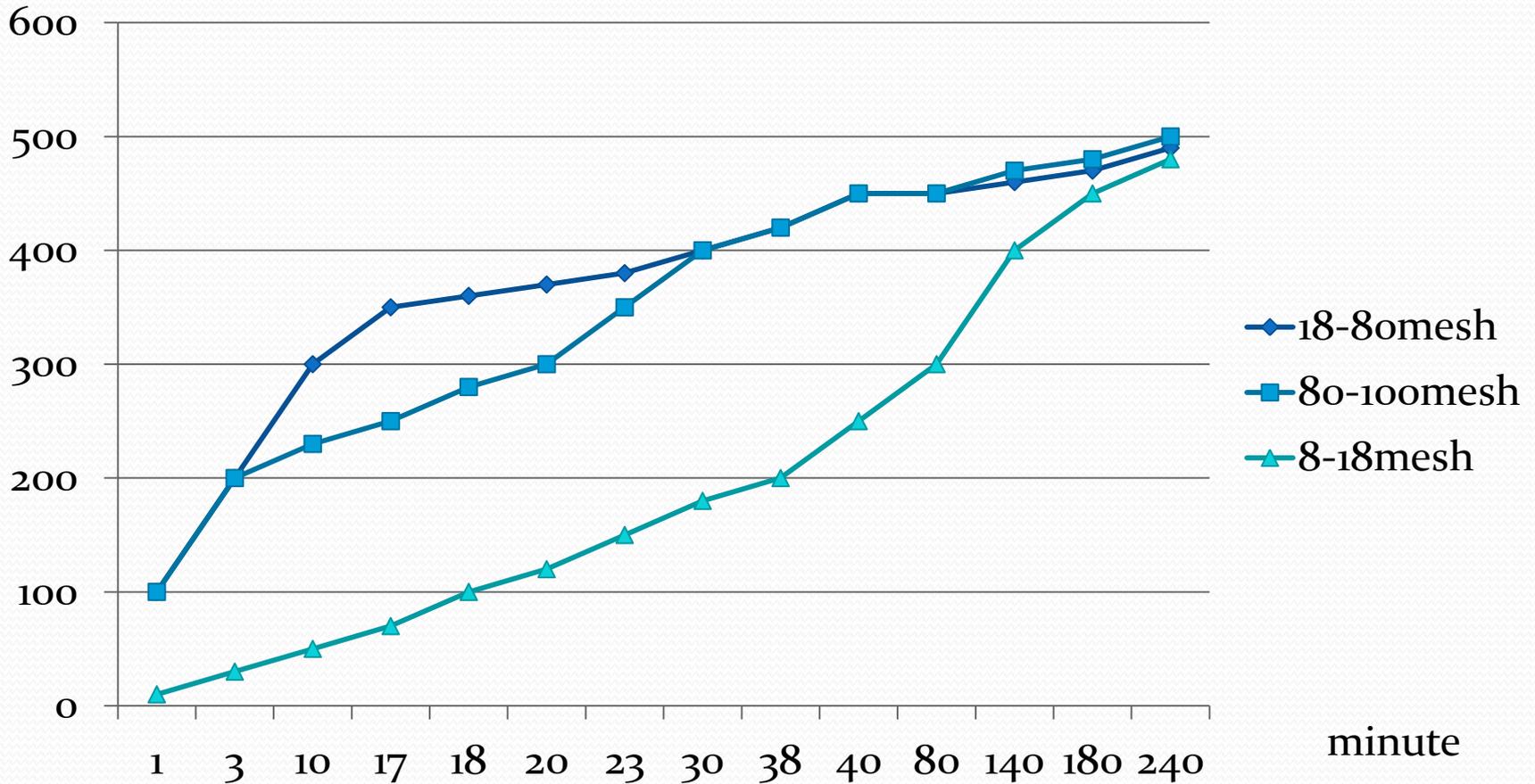








Water absorbent rate test 2





Water retention test in soil

Soil type	Test	Water passing(ml)	Water retained	Water retention rate %	Increase %
Sandy soil	Without SAP	850	650	0.43	
	With SAP	288	1212	0.81	0.86
Loam	Without SAP	562	938	0.63	
	With SAP	210	1290	0.86	0.38
Clay soil	Without SAP	714	786	0.52	
	With SAP	410	1090	0.73	0.40

Soil : 1000g; Water : 1500ml; SAP: 10g



Application notice

1. Super absorbent polymer is not a water - making agent, should make it absorb water adequately in use to protect water action.
2. It features different from industrial, it not pursues high water absorption rate, and for repeated water absorption, gel strength and water retention has special requirements, and must have the appropriate PH, 6.0-8.0 is the most appropriate, so, when choosing SAP, the absorbent effective water quantity should be the standard, the stability of the product should be valued in use. Generally speaking, it can absorb more than 100 times of the soil water, which is the appropriate amount of distilled water in 300-500.
3. Super absorbent polymer cannot be used on the surface. Due to the strong uv irradiation after absorbing water, SAP can degrade quickly and seriously affect its service life and effect.