Wet method

Hydrogel is mixed with water before poured into a planting hole. The same procedure as that for the dry method is applied.

The difference is that water is mixed with hydrogel before planting for the wet method and vice versa for the dry method



Fig 2: A farmer and a researcher planting Melia volkensii with hydrogel in Nakasongola district

Advantages of hydrogel

- Easy to apply
- Can be stored
- Lasts up to 3 years in the soil
- Hydrogels are non-toxic
- Hydrogels are biodegradable
- Up to 95% of the water absorbed by the hydrogel is available for the plant
- Hydrogel increases the water holding capacity of soils for at least 3 years.
- By retaining water, hydrogel reduces nutrients losses as a result of leaching
- Hydrogels reduce surface water evaporation

Summary

- Hydrogels have potential in improving the productivity of Uganda's dry lands.
- When applied to the soil, as the soil dries out, the **hydrogel releases up to 95%** of the absorbed water
- Hydrogels can also improve productivity of seedlings raised in the nursery by reducing costs of watering

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NARO

FOR GOD AND MY COUNTRY

MAAIF

Hydrogels for improving tree establishment and survival in

NATIONAL AGRICULTURAL RESEARCH ORGANISATION (NARO)

Introduction

Water stress is a characteristic of dry land environments which are found world over. Uganda's dry lands occupy an area often referred to as the 'cattle corridor' covering about 84,000 km² of land surface. The cattle corridor spans from south western, central, north eastern through to the northern parts of the country.

In Nakasongola, farmers have experienced increased loss of tree and vegetation cover which they largely attribute to soil moisture stress as a result of prolonged drought.

Restoration of dry lands

It is possible to increase vegetation cover and tree seedling survival in dry land environments.

One strategy to reduce the effect of prolonged drought and water stress on tree seedling losses is by use of the 'hydrogel' technology.

What is hydrogel?

Hydrogels is a substance which absorbs and retains water several times its own weight. Hydrgels are Super Absorbent Polyacrylate (SAP) material.

Why hydrogels?

Hydrogels aid early seedling establishment and survival in water-stress dry soils. This happens when they absorb, store and later avail water to the plant thereby aiding establishment and survival when incorporated in the soil during planting.



How does hydrogel work?

- When hydrogel gets in contact with water, it absorbs and retains the water. It has the capacity to absorb water up to 400 times its own weight.
- When mixed with soil under water stress conditions, the hydrogel releases and makes the absorbed water available to young plants.
- from the soil thereby creating conducive conditions for plant establishment
- Improve the physical properties of compact soils through improved aeration
- Enhance plant and tree growth, reduce mortality

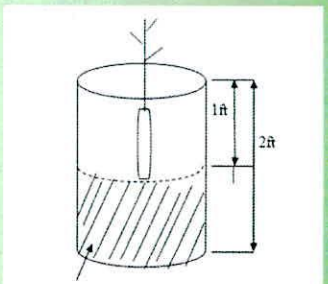
Hydrogel Application

Two methods of hydrogel application

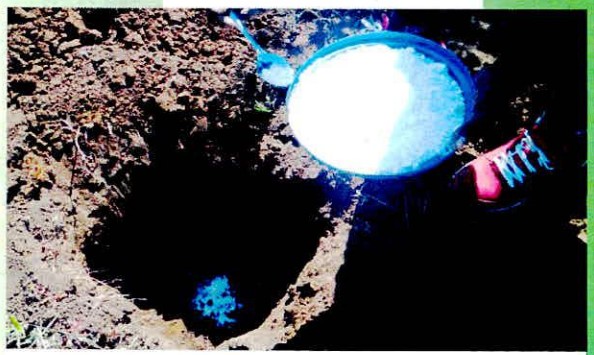
1. Dry method
2. Wet method

Dry method

A 2x2 ft. circular planting hole is dug using a hand hoe. Hydrogel granules (10g recommended) are poured into the planting hole and mixed with top soil and back filled to 1ft. Thereafter, the watered tree seedling is removed from the polythene tubes and placed in the middle of the planting hole, back fill with top soil and press the soil surrounding the root collar of the seedling.



Top soil mixed with hydrogel


Add 2 spoon fuls of hydrogel in the planting pit