FIELD PROJECT
on
Impact of Detergents on Plant Growth

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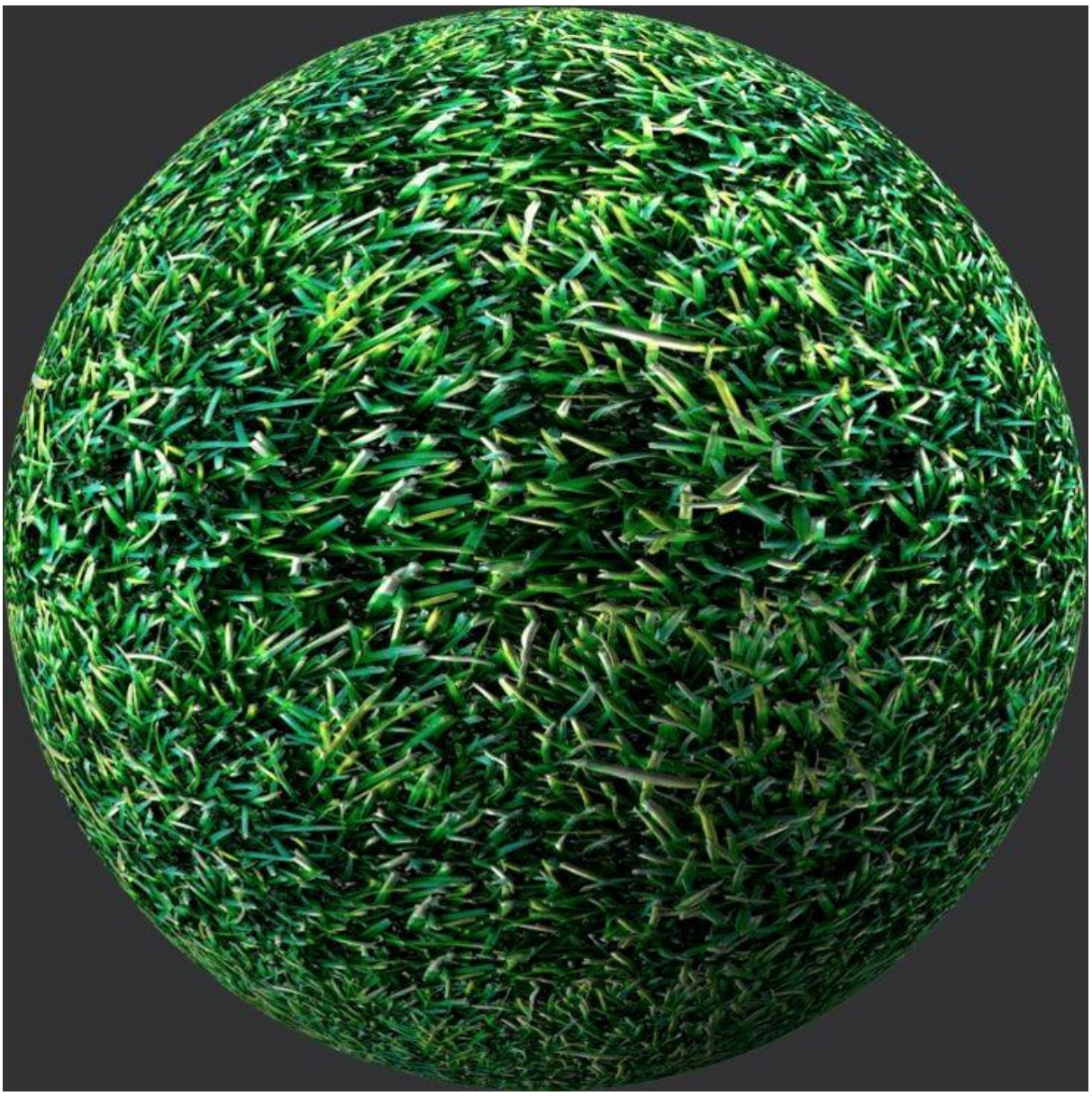
Topic: Impact of detergent on plant growth



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Introduction

A number of synthetic detergents and soaps contain volatile chemicals and substances that can have a negative effect on the normal growth of plants. According to some scientific researches, low concentration of some

detergents may be beneficial for plant growth. It is best, however, not to risk the health of the plants. Detergents containing sodium, chlorine bleach and boron may have negative effects while potassium, ammonia and phosphate show good effects on plant growth, according to harvesting rainwater.

Effects of detergents

Negative Effects

Detergents containing harmful ingredients cause damage to the soil structure by raising the alkalinity of soil. Consequently, the damaged soil deteriorates healthy plants. Some bleaching detergents kill the good bacteria in the soil.

Positive Effects

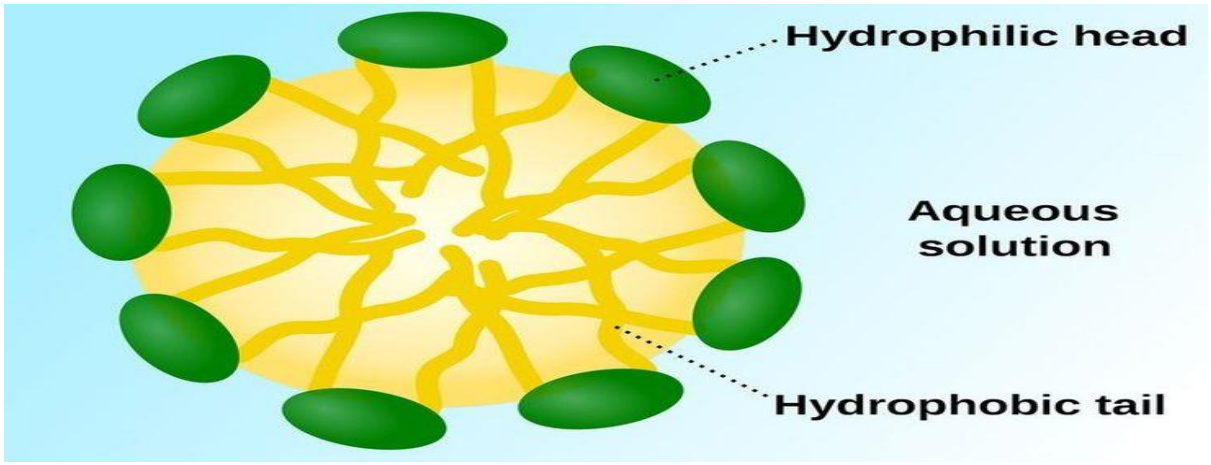
According to research, upon interaction of plants with low concentration of a detergent, several plants show signs of better growth and development.

Reasons

- **Laundry detergent reaches the soil via runoff and leaching.**

Property of detergents.

- **Bipolar, meaning it is both polar and non -polar**
- **When detergent is added, it destroys the surface tension of water.**
- **Weakens the hydrogen bond of the water molecules.**
- **Water molecules separate and evaporate**
- **Detergent molecules arrange themselves to form a ball shaped cage called micelles.**



Structure of Micelle

OBSERVATION

If detergent was added to a plant, it would block the transportation of water to the plant because the detergent will reduce the surface tension of the water which force it breaks the hydrogen bonds between them, depriving the plant of its necessary nutrients

- **If there is more than 5 % laundry detergent in the water given to the plants then they will not grow**

- **If the amount of detergent added to the plants' water supply is increased, then the mass of the plant will decrease and the colour of the plant will become less healthy, because the detergent will break down the lipids in the plant cells and destroy some of the plant cells.**

Considerations

In some situations, such as in the case of a drought, people may use recycled laundry water for irrigation. Therefore, if detergent-plant interaction becomes inevitable, you may consider switching to potassium-based detergents.

Warning

- **Avoid using detergent water for watering plants as the toxic chemicals can cause the plants to die.**

- **Detergents containing harmful ingredients cause damage to the soil structure by raising the alkalinity of soil. Consequently, the damaged soil deteriorates healthy plants. The laundry detergent specifically contains ingredients that damage grass, though it is not necessarily that it may kill it.**

- **In addition to nitrogen and phosphate, laundry detergents also contain sodium salts. These salts can build up over time and become toxic to plants, essentially poisoning the soil. To avoid this, avoid using products that contain softening agents -- which are generally high levels of salts.**

How does it affect plants?

Laundry machine water should not be used. They degrade in soil very slowly and plants will not absorb them. They won't end up in your food.

Soapy water can benefit plants, particularly in controlling certain insects, but it's important to ensure that the soap product you use doesn't have additives that are harmful to plants and that you dilute it sufficiently to avoid damage

.

Conclusion

The plant with the detergent dies because the detergent affects the plant's absorption of water by reducing the surface tension and causing the hydrogen bond to break.

The detergents also brought about increase in electrical conductivity, pH and salinity of the soil which adversely affected plant growth. The recent studies have shown that high detergent concentration is unhealthy for plant growth and brings about unfavorable changes in soil physiochemistry

Reference

1. **Effects of detergent on plants growth –hunker**
2. **Effects of detergents on plants – angels and acid**
3. **Impacts of detergents -Prezi**