

## ORAL PRESENTATIONS

### ❖ SUSTAINABLE AGRICULTURE (INCLUDING LANDSCAPE PLANNING AND FORESTRY)

#### **Sustainable Drainage Systems as a water regime protection: An Investigation through analyzing ponding time**

***Muhammad MEREI***

*Czech University of Life Sciences Prague, Czech Republic*

#### **Abstract**

Sustainable Drainage Systems (SuDS) are a key component of the circular economy. They mimic natural water management systems and are designed to slow down and clean water before it enters rivers and streams, which helps to reduce the risk of flooding and water pollution, while also improving the quality of the water for people and wildlife. SuDS are a perfect example of the circular economy principle in action, by mimicking natural systems, SuDS can help to reduce the need for costly and energy-intensive infrastructure, such as concrete drainage channels. They also help to reduce the amount of water that needs to be treated, which can save energy and reduce costs.

One of the main benefits of SuDS is their ability to slow down and clean water before it enters rivers and streams. By allowing water to infiltrate into the ground, rather than running off into drainage channels, SuDS can help to reduce the risk of flooding. This is especially important in urban areas, where the risk of flooding is often increased by the large amounts of impermeable surfaces such as concrete and tarmac. SuDS also help to improve the quality of water by removing pollutants such as oil and heavy metals. They can also help to reduce the amount of nutrients such as nitrogen and phosphorus that enter rivers and streams, which can cause problems such as eutrophication and algal blooms.

Another important aspect of SuDS is their ability to provide habitat for wildlife. They can help to create diverse ecosystems that can support a wide range of species, from insects to birds and mammals. This can help to improve the overall biodiversity of an area and can also provide valuable green space for people to enjoy.

**Purpose:** The main objective of this case study is to measure the effectiveness of SuDS in reducing flood risk by measuring ponding time.

**Methodology and results:** The study was conducted in an area with a history of flash flooding. The research methodology involved installing SuDS units in the selected area, and measuring the ponding time before and after the installation of SuDS. The findings of the study showed that the SuDS were effective in reducing the ponding time by an average of 20%, indicating a reduction in flood risk.

This case study shows that sustainable drainage systems are an effective way of reducing flood risk by slowing down and cleaning water before it enters rivers and streams. The study also highlights the importance of monitoring and measuring the effectiveness of SuDS in reducing flood risk, as well as the benefits of SuDS in terms of water quality and biodiversity.

In conclusion, sustainable drainage systems are an important component of the circular economy. They help to reduce the risk of flooding and water pollution, while also improving the quality of water for people and wildlife. They also provide habitat for wildlife, and can help to create diverse ecosystems that can support a wide range of species. SuDS can also help to reduce the need for costly and energy-intensive infrastructure, and can save energy and reduce costs. This study aims to provide a comprehensive analysis of the potential benefits of SuDS and their importance in the circular economy and urban areas.

This study is significant because it demonstrates the effectiveness of SuDS in reducing flood risk by slowing down and cleaning water before it enters rivers and streams. SuDS mimic natural water management systems and are designed to reduce the need for costly and energy-intensive infrastructure, such as concrete drainage channels. They also help to reduce the amount of water that needs to be treated, which can save energy and reduce costs. This study highlights the potential benefits of SuDS and their importance in the circular economy and urban areas.