AWA

Strategic Alliance for integrated Water management Actions

Final Conference

Measures - Rain Gardens

Project Nor3 at NVE, Norway

Norwegian Water Resources and Energy Directorate

NVE

Main Idea

Rain gardens are shallow depressions in the soil that receive runoff after rain. Storm-water enters, is held back and infiltrates the ground. In this way the water quality is improved and the ground water is recharged. Rain gardens are often covered with flowers, bushes or other types of vegetation that enjoy wet and dry conditions. This is a great opportunity to get interesting species into the garden or the urban centre.

Approach

In the SAWA project four rain gardens have been built and are under testing: Three small for single houses (3-7 m^2) and one larger (40 m^2) for several houses and a play ground (photos 1, 2 and 3). The results for a 7 m^2 rain garden (photo 1) are presented here as an ongoing master thesis project of Kjetil Kihlgren and Vegard Saksæther (UMB). Two episodes with 50 yr rain frequency in Oslo were reconstructed by entring water from a tank. The rain garden covers seven percent of the house roof area (100 m^2). The main idea with rain gardens is to retain local stormwater.

Rain garden under testing in Oslo

Testing infiltration intensity in rain garden in Melhus

Large rain garden in Trondheim

Results

First run: 30 mm in 30 minutes did not overtop the rain garden. Max. input was 121 l/min, which equals 202 l/s ha catchment. Max. runoff from the drainage system was 80 % less.

Second run: 16.5 mm in ten minutes did not overtop the rain garden either. We continued to enter water at the same intensity (184 l/min or 302 l/s ha), until the rain garden was overtopped after approx. 17 minutes. The runoff peak was reduced with 84 %.

A rain garden has the ability to store and reduce high rain intensities. For several areas as the catchment (e.g., house roof) – rain garden ratio may be less than 7 %, depending on the soil texture in the rain garden. In clay soils exchange of soil and drainage may be necessary to keep the size small.

Contribution to SAWA

When making Flood Risk Management Plans (FRMP) the need of tested measures in the toolbox is essential. Rain gardens are a measure with a great potential; they handle the urban stormwater, they can be retrofitted and improves the local environment in a blue-green direction. A real win – win solution.

More about rain gardens: www.iwawaterwiki.com

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