



## USDA-CSREES 2005 National Water Quality Conference

### Contributions of Suburban Land Cover to Stormwater Runoff

*Abstract:*

**Situation:** *The contribution of urban and suburban land to non-point source pollution is thought considerable. Little is known about how land covers of different vegetation representative of suburban areas (e.g. bare soil, turfgrass lawn, mulched beds, forest) influence the potential for stormwater runoff and non-point source pollution.*

**Objectives:** *In model suburban landscapes of different land cover, we manipulate precipitation to quantify the influence of land cover on infiltration and runoff of stormwater, sediment and nutrients.*

**Methods:** *Sloped plots include bare soil, fescue-blend turfgrass, shredded hardwood bark mulch, and simulated urban forest (shredded hardwood leaf mulch and 2" caliper Pin Oak trees). PVC troughs direct runoff from natural precipitation to reservoirs. Troughs also intercept 50% of natural precipitation in some plots and deliver it to plots receiving 150%. Precipitation events, soil moisture, and other environmental parameters are monitored. Runoff water and sediment are collected and subsamples analyzed for important non-point source nutrient pollutants.*

**Partnerships:** *USDA/CSREES Mid-Atlantic Water Quality Program, Virginia Department of Forestry*

**Resources:** *Virginia Tech's Kentland Farm, staff and students in the Virginia Tech Department of Horticulture. USDA/CSREES Mid-Atlantic Water Quality Program.*

**Integration of Research, Teaching, and Extension:** *These plots collect data to answer fundamental and applied research questions in urban and suburban ecology, and support a Masters Degree student thesis and undergraduate research. Results inform extension programs in Sustainable Landscapes in Virginia, and the curriculum in HORT 2134: Urban Horticulture.*

**Results:** *In 6 significant rain events in the first season so far, bare soil plots contribute considerably more water volume, sediment and nutrients to runoff from precipitation than other treatments. First season results indicate turfgrass plots are most effective at reducing stormwater, sediment and nutrient runoff. Questions remain about the influence of stand establishment, and the tendency of soils to saturate during rain events and to retain moisture between events.*

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