



Genetically modified hydrographs: what can grass genetics do for temperate catchment hydrology?

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In temperate European catchments, increased volumes and intensity of winter rainfall are predicted, leading to raised levels of erosive runoff. Hydrologists have long been aware of the pivotal role of vegetation in regulating and buffering the hydrological cycle. It is well known that forested catchments produce lower water yields and hence a lower risk of flooding compared to grassland dominated catchments. Grasslands have high levels of energetic overland and inter flow, which carries a range of soluble and particulate pollutants to surface water bodies. Recent, exciting advances in monocotyledon molecular biology and plant breeding in general may provide an opportunity for humans to actively select plant traits that have beneficial effects on hillslope and catchment hydrology. Here we shall describe an interdisciplinary project involving plant breeders, soil scientists and hydrologists that is looking to assess the potential for grass plant genetics to modify soil hydraulic properties at the small scale and catchment hydrographs at the larger scale. Our hypothesis is that grasses can be genetically selected to reduce the hydrological energy of grassland dominated catchments. Knowledge gained from microcosm and plot scale biophysical experiments will be integrated with testing of model based hypothesis at the catchment scale.