



Non-cellulosic polysaccharides help to reveal the history of thick organic surface layers on calcareous Alpine soils

Jörg Prietzel (1) and Sandra Spielvogel (2)

(1) Lehrstuhl für Bodenkunde, TU München, 85350 Freising-Weihenstephan, (2) Institute of Integrated Natural Sciences, University of Koblenz-Landau

We investigated the potential of non-cellulosic polysaccharides (NCP) as biomarkers to identify the plant types that dominate present and past litter input into organic surface covers on calcareous Alpine soils and to reveal historic vegetation changes. At two sites in the Alps, NCP monomers were quantified in different organs of site-dominating plants, the Oa horizon of four Follic Leptosols, and different sections of thick organic surface layers of four Follic Histosols on calcareous bedrock.

The dominating plant types at our study sites differ markedly in their NCP composition and (galactose + mannose)/(arabinose + xylose) [GM/AX] ratio (grasses and sedges: 0.2; dicots *Fagus* and *Vaccinium*: 0.2–0.6; conifers *Abies*, *Picea*, *Pinus*: 0.7–2.4; mosses: 5). For all except one soil, the NCP signature of the uppermost Oa horizon reflects the present vegetation. For all Histosol O horizons, NCP signatures indicate a dominance of conifer litter throughout their development (up to 1,500 years). Different NCP and GM/AX depth profiles reflect specific patterns of O layer genesis.

From those results we conclude that NCP and GM/AX depth profiles in organic surface covers of soils provide important information about dominating litter sources in the past and can be valuable tools to reveal historic vegetation and/ or land use changes.