
Abstract. This paper reports a study of vegetation development on permanent experimental plots during five years of succession. 9 (1 m²) plots were filled with three typical substrates from man-made habitats of urban and industrial areas in the region of Berlin. The three substrates (a commercial 'topsoil', a ruderal 'landfill' soil and a sandy soil), differ in organic matter and nutrient contents. Relevés of species composition and percent cover of each species present were made monthly during the growing season since the initial stage of vegetation development. This paper describes the different successional pathways on topsoil and ruderal soil and the colonization process on sandy soil. On topsoil, ruderal annuals are dominant in the first year and are replaced by short-lived perennials from the second year. Those species were replaced by long-lived perennial herbs (Ballota nigra or Urtica dioica) from the third year of succession. On the ruderal landfill soil the early successional stages are less sharp and the perennial Solidago canadensis is able to dominate within one year after succession was initiated. On sandy soil there is still an ongoing colonization process, where pioneer tree species like Betula pendula and Populus nigra play a main role. The importance of 'initial floristic composition', the role of substrate for community structure and the peculiarities of successional sequences on anthropogenic soils in the context of primary and secondary successions are discussed.

Keywords: Deposit soils; Initial floristic composition; Permanent quadrats; Primary succession; Ruderal plant communities; Secondary succession; Solidago canadensis; Species density.