Extended Data Fig. 1: Soil depth decrease due to erosion. The erosion rate decreases with cultivation duration due to depletion of easily erodible materials. It reaches steady state conditions when erosion becomes equal to soil genesis. After major erosion, the soil taxonomic group changed due to a strong decrease in the Ah / Ap horizon depth, which led to new qualifiers and master properties. Other frequent examples of soil class changes are presented [52]:

Cambisols ⟶ irrigation in arid environments ⟶ Solonchaks

Plinthic Acrisols ⟶ erosion until plinthite and its hardening near the surface ⟶ Plinthosols

Luvisol ⟶ total truncation until deep loess ⟶ Regosols

Haplic Nitisols ⟶ surface waterlogging with long lasting rice irrigation ⟶ Anthraquic Nitisols

Gleysols ⟶ drainage ⟶ Cambisols

Protothionic Fluvisols ⟶ drainage ⟶ Orthithionic Fluvisols

Supplementary Fig. 1: Soil depth decrease due to erosion. The erosion rate decreases with cultivation duration due to depletion of easily erodible materials. It reaches steady state conditions when erosion becomes equal to soil genesis. After major erosion, the soil taxonomic group changed due to a strong decrease in the Ah / Ap horizon depth, which led to new qualifiers and master properties. Other frequent examples of soil class changes are presented in (Dudal, 2004)