

## Stabilization of water-stable aggregates under forest and agricultural soils

Vladimír Šimanský, Nora Polláková, Ľubica Pospíšilová, Jerzy Jonczak, Agnieszka Parzych

### References

- AMÉZKETA E. (1999) Soil aggregate stability: a review. In *J. Sustain. Agric.*, vol. 14, pp. 83–151.
- BALASHOV, E. and BUCHKINA, N. (2011) Impact of short- and long-term agricultural use of Chernozem on its quality indicators. *Int. Agrophys.*, vol. 25, pp. 1–5.
- BLAVET, D. et al. (2009) Effect of land use and management on the early stages of soil water erosion in French Mediterranean vineyards. In *Soil Till. Res.*, vol. 106, pp. 124–136. doi: <http://dx.doi.org/10.1016/j.still.2009.04.010>
- BRONICK, C.J. and LAL, R. (2005) The soil structure and land management: a review. In *Geoderma*, vol. 124, no. 1–2, pp. 3–22. doi:<http://dx.doi.org/10.1016/j.geoderma.2004.03.005>
- BURT, R. et al. (2001) Properties and effect of management on selected granitic soils in Zimbabwe. In *Geoderma*, vol. 101, pp. 119–141. doi:[https://dx.doi.org/10.1016/S0016-7061\(00\)00100-2](https://dx.doi.org/10.1016/S0016-7061(00)00100-2)
- GROSBELLET, G. et al. (2011) Improvement of soil structure formation by degradation of coarse organic matter. In *Geoderma*, vol. 162, pp. 27–38. doi:<https://dx.doi.org/10.1016/j.geoderma.2011.01.003>
- HE, W.Q. et al. (2005) Main affecting factors of soil wind erosion under different land use patterns—A case study in Wuchuan County, Inner Mongolia. In *Chin. J. Applied Ecol.*, vol. 16, pp. 2092–2096.
- HRIVŇÁKOVÁ, K. et al. (2011) *The uniform methods of soil analysis*. Bratislava: VÚPOP, 2011. 136 p. (in Slovak).
- HU, F. et al. (2015) Particles interaction forces and their effects on soil aggregates breakdown. In *Soil Till. Res.*, vol. 147, pp. 1–9. doi:<https://dx.doi.org/10.1016/j.still.2014.11.006>
- CHINCHALIKAR, A.J. et al. (2012) Evolution of structure and interaction during aggregation of silica nanoparticles in aqueous electrolyte solution. In *Chem. Phys. Lett.*, vol. 542, pp. 74–80. doi: <https://dx.doi.org/10.1016/j.cplett.2012.05.065>
- IUSS Working Group WRB. (2015) *World Reference Base for Soil Resources 2014, update 2015. International soil classification system for naming soils and creating legends for soil maps*. World Soil Resources Reports No. 106. FAO, Rome.
- JASTROW, J.D. (1996) Soil aggregate formation and the accrual of particulate and mineral-associated organic matter. In *Soil Biol. Biochem.*, vol. 28, pp. 665–676. doi: [https://dx.doi.org/10.1016/0038-0717\(95\)00159-X](https://dx.doi.org/10.1016/0038-0717(95)00159-X)
- JÓZEFACIUK, G. and CZACHOR, H. (2014) Impact of organic matter, iron oxides, alumina, silica and drying on mechanical and water stability of artificial soil aggregates. Assessment of new method to study water stability. In *Geoderma*, vol. 221–222, pp. 1–10. doi: <https://dx.doi.org/10.1016/j.geoderma.2014.01.020>
- KROL, A. et al. (2013) Effects of organic and conventional management on physical properties of soil aggregates. In *Int. Agrophys.*, vol. 27, pp. 15–21. doi:<https://dx.doi.org/10.2478/v10247-012-0063-1>
- KURAKOV, A.V. and KHARIN, S.A. (2012) The Formation of Water-Stable Coprolite Aggregates in Soddy-Podzolic Soils and the Participation of Fungi in This Process. In *Euras. Soil Sci.*, vol. 45, pp. 429–434.
- LAL, R. and SHUKLA, M.K. (2004). *Principles of soil physics*, Marcel Dekker, New York.
- LE BISSONNAIS, Y. (1996) Aggregate stability and assessment of soil crustability and erodibility: theory and methodology. In *Eur. J. Soil Sci.*, vol. 47, pp. 425–437. doi: <https://dx.doi.org/10.1111/j.1365-2389.1996.tb01843.x>

- LI, G.Y. and FAN, H.M. (2014) Effect of Freeze-Thaw on Water Stability of Aggregates in a Black Soil of Northeast China. In *Pedosphere*, vol. 24, pp. 285–290. doi:[https://dx.doi.org/10.1016/S1002-0160\(14\)60015-1](https://dx.doi.org/10.1016/S1002-0160(14)60015-1)
- LI, Y.B. et al. (2006) Impact of land cover types on the soil characteristics in karst area of Chongqing. In *J. Geograph. Sci.*, vol. 16, pp. 143–154. doi:<https://dx.doi.org/10.1007/s11442-006-0202-3>
- LOGINOW, W. et al. (1987) Fractionation of organic carbon based on susceptibility to oxidation. In *Pol. J. Soil Sci.*, vol. 20, pp. 47–52.
- NEEDELMAN, B.A. et al. (1999) Interaction of Tillage and Soil Texture: Biologically Active Soil Organic Matter in Illinois. In *Soil Sci. Soc. Am. J.*, vol. 63, pp 1326–1334. doi:<https://dx.doi.org/10.2136/sssaj1999.6351326x>
- NEUFELDT, H., et al. (2002) Texture and land-use effects on soil organic matter in Cerrado Oxisols, Central Brazil. In *Geoderma*, vol. 107, pp. 151–164. doi: [https://dx.doi.org/10.1016/S0016-7061\(01\)00145-8](https://dx.doi.org/10.1016/S0016-7061(01)00145-8)
- OADES, J.M. and WATERS, A.G. (1991) Aggregate hierarchy in soils. In *Aust. J. Soil Res.*, vol. 29, pp. 815–828.
- ORLOV, V. and GRISHINA, I. (1981) *Guide of humus chemistry*. Moscow: Moscow University Publishing, 1981. 124 p. (in Russian).
- PARADELO, R. et al. (2013) Water-dispersible clay in bare fallow soils after 80 years of continuous fertilizer addition. In *Geoderma*, vol. 200-201, pp. 40–44. doi:<https://dx.doi.org/10.1016/j.geoderma.2013.01.014>
- PICCOLO, A. and MBAGWU, J.S.C. (1990) Effects of different organic waste amendments on soil micro-aggregates stability and molecular sizes of humic substances. In *Plant Soil*, vol. 123, pp. 27–37. doi: <https://dx.doi.org/10.1007/BF00009923>
- PLANTE, A.F. and MCGILL, W.B. (2002) Soil aggregate dynamics and the retention of organic matter in laboratory-incubated soil with differing simulated tillage frequencies. In *Soil Tillage Res.*, vol. 66, pp. 79–92.
- POLLÁKOVÁ, N. (2013) Soil subtypes classified in Nature Reserve Arboretum Mlyňany, Slovakia. In *Folia Oecol.*, vol. 40, pp. 91–96.
- POLLÁKOVÁ, N. et al. (2017) The influence of soil organic matter fractions on aggregates stabilization in agricultural and forest soils of selected Slovak and Czech hilly lands. In *J. Soils Sediments*, doi: <https://dx.doi.org/10.1007/s11368-017-1842-x>
- SANTOS, D. et al. (1997) Uniform separation of concentric surface layers from soil aggregates. In *Soil Sci. Soc. Am. J.*, vol. 61, pp. 720–724. doi: <https://dx.doi.org/10.2136/sssaj1997.03615995006100030003x>
- SHAW, J.N. et al. (2002) Mineralogy of eroded sediments derived from highly weathered Ultisols of central Alabama. In *Soil Till. Res.*, vol. 68, pp. 59–69. doi:[https://dx.doi.org/10.1016/S0167-1987\(02\)00081-8](https://dx.doi.org/10.1016/S0167-1987(02)00081-8)
- SZOMBATHOVÁ, N. and ZAUJEC, A. (2001) Changes of the soil properties in the National Nature Reserve Báb after 27 years. In *Ekologia (Bratislava)*, vol. 20, pp. 128–132.
- ŠIMANSKÝ, V. (2011) Differences in aggregate stability of soil due to various fertilization. In *Agrochémia*, vol. 51, pp. 16–19. (in Slovak).
- ŠIMANSKÝ, V. et al. (2013) The effect of organic matter on aggregation under different soil management practices in a vineyard in an extremely humid year. In *Catena*, vol. 101, pp. 108–113. doi:<http://dx.doi.org/10.1016/j.catena.2012.10.011>
- ŠIMANSKÝ, V. and BAJČAN, D. (2014) The stability of soil aggregates and their ability of carbon sequestration. In *Soil Wat. Res.*, vol. 9, pp. 111–118.
- ŠIMANSKÝ, V. et al. (2014) Effects of carbonates and bivalent cations and their relationships with soil organic matter from the view point of aggregate formation. In *Agriculture (Poľnohospodárstvo)*, vol. 60, pp. 77–86. doi: <https://dx.doi.org/10.2478/agri-2014-0009>

TISDALL, J.M. and OADES, J.M. (1982) "Organic matter and water-stable aggregates in soils." In *J. Soil Sci.* vol. 33, pp. 141–163.

ZHANG, W. et al. (2012) Attachment efficiency of nano-particle aggregation in aqueous dispersions: modeling and experimental validation. In *Environ. Sci. Technol.*, vol. 46, pp. 7054–7062. doi: <https://dx.doi.org/10.1021/es203623z>