



## Phyto-melioration: How trees can help to protect against water erosion?

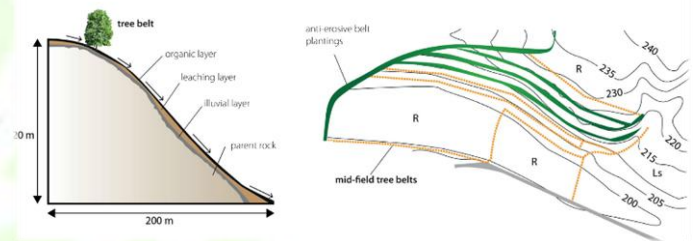
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Usefulness of agroforestry in water erosion control has been already demonstrated in different climatic zones, but less is known about methods how to stop erosion on arable fields of temperate climate using woody vegetation. We recommend selected protection measures within so-called phyto-melioration technique (set of practices aiming to improve soil productivity and land potential through cultivation of selected crop species).

Steep slopes of arable lands, susceptible to very strong erosion (at inclination over 15°) should be covered with sward, supplemented by introduction of scattered woodlots. On slopes on silty and loess soils, susceptible to strong erosion (at inclination 10-15°) contour farming including buffers strips (strong rooting bushes and sward with herbal layer) needs to be performed. The belts should be introduced, perpendicularly to the slope at the maximum distance 150m and adapted to spatial arrangement of fields. The first buffer strip of approx. 5m width and triple-row should be established at the transition point from hill top to the slope. Other transition points (more exposed, usually in a crescent-shape form) should be afforested with bushes. Slopes susceptible to average erosion (at inclination 6-10° on silty and loess soils and 10-15° on others), contour belts can be arranged with distances up to 200-220m. Orchard type bench terraces with green sward are recommended as well on slight slopes (inclined less than 12°) that are susceptible to erosion.

Stabilizing eroded gullies is also important for protection of arable lands. Prevention measures include planting appropriate mix of deep-rooted grasses and woody perennials. Upper part around gully should be protected by wide grass strip with shrubs.

Water banks adjacent to arable lands need to be stabilized by at least 10m afforested strips with deep rooted species of grasses, bushes and trees.



Anti-erosion tree belts location on loess soil (Kujawa et al. 2018)

### Further information:

Józefaciuk A., Józefaciuk C (1999) *Soil protection against erosion. Guidelines for decision makers and land users* [in Polish] IUNG Puławy: 133 ps.

Zajączkowski K., Tałałaj Z., Węgorzek T., Zajączkowska B. (2001). *Selection of trees and bushes for afforestation of rural areas* [in Polish] Wydawnictwo IBL, Warszawa: 78 ps.

Zajączkowski J., Zajączkowski K (2013). *Trees outside Forests* [in Polish]. Powszechne Wydawnictwo Rolne i Leśne, Warszawa.

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