

Central Asia's cemeteries: important learning sites for sustainable land management options

Tajikistan and Kyrgyzstan are dominated by hilly to mountainous semi-arid rainfed lands that receive most of the annual precipitation in the period between autumn to spring, whereas the summers tends to be hot and dry. Large areas of both countries are covered by loess soils, that are highly vulnerable to erosion.

Originally the region was covered by extensive forests of different composition and density. However, over the course of the past centuries most of the native woodlands have been destroyed and are nowadays -together with natural grasslands- used as pastures. Influenced by soil surface compaction, erosion and overgrazing, in both countries most pastures are heavily degraded and of low productivity.

In response to widespread pasture degradation in Kyrgyzstan and Tajikistan, international donors and implementing agencies are since many years actively engaged in promoting „sustainable and productive pasture management“. Despite the provision of intensive support in this area for more than a decade, positive changes on the ground remain limited.

A closer look at some of the existing fenced cemeteries located in semi-arid rainfed areas of Tajikistan and Kryrgyzstan provide some important insights, why the idea of promoting „sustainable and productive pasture management“ in large parts of both countries is basically illusionary.

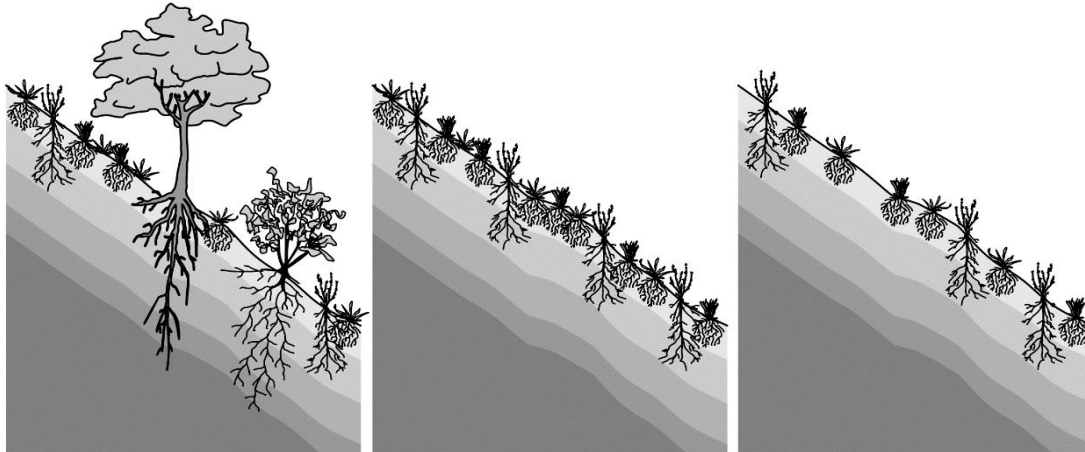


Above photos show images of fenced cemeteries in semi-arid, rainfed areas near Besckkent, Isfana, Jalal-Abad and Octobersky (all South Kyrgyzstan) and Sovietski (South Tajikistan)

During the second half of the hot and dry summer period, fenced cemeteries in semi-arid rainfed areas of Kyrgyzstan and Tajikistan often appear as small „green islands“ amidst wide areas of grey-brownish degraded, low productive pastures. The density, diversity and origin (self seeding or planting) of trees and shrubs found within the fenced perimeters of the cemeteries, vary within a wide range.

The differences of the annual growth and biomass production potential of (a) mixed *grass/shrub/tree vegetation* (reflected by the situation within the cemeteries) and (b) *mere pasture* based land use systems in formerly forest covered semi-arid areas are illustrated in the following graphic.

Graphic: Impact of the replacement of diverse ecosystems in semi-arid areas, composed of shallow-, medium- and deep rooting plants by land use systems, that rely on shallow rooting species.



Whereas in many summer dry semi-arid rainfed areas of Central Asia deep rooting shrubs and trees are able to remain green and productive in summer till late autumn due to their ability to tap water and nutrient stocks including from deeper parts of the soil, water scarcity in the upper soil layers often limits the growth of -mostly shallow rooting- pasture plants to a period of just 3-3,5 months.

The destruction and replacement of diverse forest ecosystems by predominantly shallow rooting pasture vegetation contributed in many semi-arid rainfed areas of Kyrgyzstan and Tajikistan to:

- (a) a severe alteration of the nutrient and water, characterized by a chronic underutilization of existing water and nutrient stocks in deeper parts of the soil,
- (b) substantially reduce the lands' annual biomass production and,
- (c) increase the vulnerability of affected areas to the effects of alterations of the climatic regime.

Above outlined, is backed by the results of several practise oriented experiments and research activities in both countries

In conclusion it can be stated, that apart from the general difficulty to manage slopelands covered by highly erosion prone loess soils as „*sustainable* pastures“, the idea of promoting „*productive* pasture management“ on sites, that are basically unsuitable for the purpose, has to be regarded as inappropriate.

The vegetative development of presented cemeteries provides important guidance for the design of improved land management systems in large semi-arid, rainfed areas of Kyrgyzstan and Tajikistan. In order to strengthen natural resource management in terms of *sustainability*, *quantity and quality of annual biomass production* and *climate change resilience*, large parts of semi-arid rainfed lands, that are currently used as pastures, need to be replaced by more diverse vegetative structures under integration of suitable shallow-, medium- and deep rooting species.

Time to act!