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Cuttings regeneration of various species on eroded marly catchments under a mountainous and Mediterranean climate (Southern Alps, France)

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Soil erosion in torrential marly catchments in the French Southern Alps, due to ancient deforestation and overgrazing, causes problems of torrential lava for local populations and silting for socio-economic issues such as reservoirs. Erosion is about 1 cm/year. Vegetation and bioengineering works can be effective for erosion control on such lands. In gullies, the use of cuttings is interesting for the efficient and rapid development of a vegetation cover able to avoid erosion or to trap sediment. In other climatic regions of mountain lands, Salix species are usually used as cuttings, but their use under a Mediterranean climate is uncertain. Other species naturally present in Mediterranean areas could be used, but knowledge on their faculty to be used as cuttings is low. The objective of this study was thus to carry out experiments for the use of cuttings of 6 species (Salix purpurea, Salix eleagnos, Cornus sanguinea, Robinia pseudacacia, Ononis fruticosa and Hippophae rhamnoides) on marly lands with Mediterranean climate, in the Southern Alps of France. The results show that Salix species can have very good rates of regeneration, despite a very dry climate. Development of roots is also effective. But lots of cuttings died where water was not sufficiently retained. Other species present low capacities for regeneration, as well as low development of roots. Therefore, Salix can be used as efficient species for revegetation on eroded marly gullies with Mediterranean climate, but knowledge and bioengineering techniques have to be improved to better retain water and make it available for the cuttings.