



Preliminary assesment and cost analysis of incentives for gully control in agricultural areas of Andalusia (Southern Spain)

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A recent programm of echnomical incentives for for erosion control and rise of biodiversity in agricultural fields started to be applied in Andalusia in year 2009-2010. Due to the limited application of these kind of erosion control schemes in the region in the last 20 years, it has required the development of technical guidelines (through the brochures and handbooks), evaluation of costs to tune the economic incentives, which cover forestation, check dams for gullies and barriers in banks, as well as a preliminary analysis of the farmers works during year 2009-2010.

In this communication we present preliminary results. The demands of the farmers are described based on an analysis of the requests for incentives made by farmers during year 2009-2010 in Andalusia. This analysis includes location, gully, wall, vegetative barriers and landscape characteristics. A preliminary cost analysis is also presented based on the main features of gullies and banks in the province of Cordoba, according to different materials and construction solutions. In the case of dams for gullies, 546 applications were asked and 68% were approved while there were 725 applications for barriers and walls and approved 59% of them. The studied scenarios for the cost analysis present three extreme cases: “mean”, “small” and “big” dams/barriers according to the attributes (length, width, depth and slope) of the measured gullies/banks.

A rectangular cross section have been considered for the gullies whose attributes have been a mean weight of 3.6 m (max = 200 m; min = 49 m), a mean depth of 1.7 m (max = 2.7 m; min = 0.7 m), a mean length of 124 m (max = 200 m; min = 49 m) and a range of slopes determining the separation of dams between 31% and 13% (mean slope = 22 %).

In the case of walls, only the height was varied ($h = 0.4\text{m}$; $h = 0.1\text{ m}$ and $h = 2\text{ m}$). The associated costs (material, labour, equipment) for concrete dams have been 7.9 €/m², 50.4 €/m² and 91.7 €/m² for the smallest, the mean and the biggest case, respectively. For dams made of clean gravel and river rocks closed in metal grids, the cost varied between 6.6 €/m² and 75.8 €/m² (mean = 42.3 €/m²) and for dams made of rocks between 5.4 €/m² and 66.8 €/m² (mean 37.3 €/m²). In the case of barriers according to the three considered height, the cost were for the concrete, 61.4, 141.6 and 340.4 €/m; for gravel and river rocks closed in metal grids, 42.6, 102.8 and 251.3 €/m; and for the rocks 18.2, 74.9 and 180.8 €/m.

The monitoring of the efficiency of different materials and designs is essential for justifying the investment and for improving guidelines adapted to the conditions of the region which means to maximize its impact on erosion control.