

## 混播草带防治坡耕地水土流失效应的研究

### Effects of mixed grass strip on reducing water and soil losses in sloping fields

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中文摘要:

为有效防治坡耕地水土流失,提高坡耕地持续利用,于2001~2002年选用非洲狗尾草、高羊茅和红三叶3种优良牧草,在云南昆明王家箐流域的坡耕地上进行了混播草带防治水土流失效应的研究。试验设混播非洲狗尾草与红三叶(A)、混播高羊茅与红三叶(B)、单播高羊茅(C)和无草带种植(D)4个处理,坡度在 $13.2^{\circ}$ ~ $14^{\circ}$ 之间;每个处理坡耕地上部等高种植 $9\text{ m}\times 2\text{ m}$ 玉米,基部种植 $0.5\text{ m}$ 宽的草带,底部设径流收集池。结果表明:选择适宜草种进行混播,所形成的草带水土保持效果优于单播草带;在雨季(5~10月)4个处理的水土流失量为 $D>C>B>A$ ,与对照D相比,处理A、B、C的径流量分别减少了79.19%、64.02%和51.53%,侵蚀量分别减少了92.04%、84.49%和78.70%;混播豆科和禾本科牧草,有利于增加草带的总盖度和草层高度,促进根系生长,增强草带的水土保持效果。

英文摘要:

In order to reduce soil and water losses in sloping fields and improve sustainability on fragile slopes, the field experiment was conducted in 2001 and 2002, in Wanjiajing catchment, Yunnan and the effect of mixed grass strip on reducing water and soil losses in sloping fields was analyzed. Four treatments including *Setaria sphacelata*×*Trifolium pratense* (A), *Festuca arundinacea*×*Trifolium pratense*(B), *Festuca arundinacea* (C) and without grass strip(D), with three replications which the slopes range from  $13.2\%$  to  $14\%$ , were investigated. The contour grass strip with width of  $0.5\text{ m}$  was placed at the bottom of each plots. Maize of  $18\text{ m}^2$  was planted at the upper of sloping fields of each plot. Runoff and sediment were collected during maize growing season (May to October). The results show that the water and soil losses of the mixed grass strip are less than that of the singled grass strip. The total amounts of runoff and sediment are significantly different among the four treatments with the order of  $D>C>B>A$ . Compared with the treatment D, the runoff amounts of treatments A, B and C were reduced by 79.19%, 64.02% and 51.53%, respectively, the soil erosions are reduced by 92.04%, 84.49% and 78.70%, respectively. Mixed grass strip is in favor of increasing vegetation cover, plant height and grass root system. The better effectiveness of soil and water conservation is achieved when gramineous grass and leguminous grass are intercropped.

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