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Ardavan Ghorbani[1]

Land Use MApping and Ecological Capability Evaluation of Dry Farming Lands (Based on Slope) for Converting to Pasture in Zilbar-Chay Watershed Using GIS

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Abstract

In this research, after land use and slope mapping, the ecological capability of dry farming lands in Zilbar-chay watershed were evaluated to convert pasture using GIS in West-East Azerbaijan. Slope map was derived from DEM model and present land use map was derived using existing information, Landsat images, aerial photos and fieldworks. Then, land use and slope map were compared to discriminate the dry farming lands, which were distributed on more than 12% of slopes for converting to pasture. Results show that the discrimination between dry farming lands from rangelands according to the scale of the study and the size of cultivated lands was faced with problem, thus some parts of the rangeland and dry farming lands were mapped as complex units. Accuracy of the produced map was 77% and Kappa coefficient was 0.77. Total dry farming lands on watershed were estimated about 9,364 ha. Some 5,555 ha of

1 - Assistant Professor at the Department of Range and Watershed Management, University of Mohaghegh Ardebili.

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dry farming lands has distributed on the area with the higher than 12% slopes, covering 2,352 ha of areas with 20 to 30% and 3,203 ha on the areas with 12 to 20% slope. From the ecological capability perspective these lands should be converted to other land uses such as pasture. By continuing current dry farming land practices on the areas with higher slopes and dry farming technical issues, particularly up and down tillage, would cause increase in the severity of degradation and in turn the loss of soil and water in a long period. While, if these areas convert to permanent vegetation cover (pasture), not only the amount of yield will be increased some 11,110 tons of forage per year and in comparison with wheat, the amount of yield will be increased about 2.4 times, but it also will improve the erosion control and soil and water conservation.

Keywords: Abandoned Dry Farming, Dry Farming conversion; Pasture; Sustainable Development; Ecological Capability.

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