

Vegetation Pattern Topographic Differentiation of YaoXian county , shaanxi province, China

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Abstract—Based on the theory of landscape ecology and plant geography, taking Yaoxian county, Shaanxi province, China as the sample region, with 1:50000 DEM and vegetation map as data source, using DEM terrain analysis technology, GIS spatial analysis technology, and mathematical statistics analysis technology, this paper firstly studied the relationship between vegetation and elevation, slope and aspect, and on this basis, according to elevation, slope, and aspect three terrain factors, divided Yaoxian county into low, medium, high, gentle slope, steep slope, sunny slope, non-sunny slope, comprehensive studied vegetation distribution in different regions under the combination, finally, according to landform classification theory, extracted ditch land, ditch slopes land, gap land between ditch, mountain valley area, loess plateau hilly-gully region and flat area etc. landform type, researched vegetation distribution characteristics under different geomorphic types. Come to the conclusion:

(1) Vegetation show some distribution rules along with the change of elevation, slope and aspect. Vegetation has certain elevation living space, with Green bush and grass in Summer with fallen leaves biggest, followed by farmland, typical meadow, evergreen coniferous forest, with vegetable plot least. Evergreen coniferous deciduous mixed forests distribute in highest region of the terrain, followed by deciduous broad-leaved forest, evergreen coniferous forest. Vegetable plot and orchard distribute in the lower farmland. Farmland, Vegetable plot and orchard mainly distribute in gentle slope area. Other vegetation has less dependence on the slope. In the category of farmland, irrigated land and paddy field are mainly distributed in flat area, and dependence of dry field on slope additionally reduces. Farmland, vegetable plot and orchard is higher to the sun, other vegetation significantly reduce to the sun. In general, natural vegetation is less than artificial vegetation to the sun.

(2) Farmland mainly distribute in gentle slope, low and middle ground. Evergreen coniferous forest and evergreen coniferous and deciduous broad-leaved mixed forest is mainly distributed in steep slope, middle ground and highland. Deciduous broad-leaved forest is mainly distributed in steep slope and highland. Deciduous broad-leaved shrubs are mainly distributed in steep slope and middle ground. Green bush and grass in summer with fallen leaves is mainly distributed in steep slope and lowland. Typical meadow mainly distribute in the highland. Plantation mainly distribute in steep slope and middle ground. Farmland mainly distribute in gentle slope, middle and lower

land. Vegetable plot, orchard are mainly distributed in gentle slope and lowlands.

(3) In flat areas, other kinds of vegetation have its distribution in addition to evergreen coniferous forest, evergreen coniferous and deciduous broad-leaved mixed forests, deciduous broad-leaved forest and typical meadow. Ditch slopes land is mainly distributed by green bush and grass in Summer with fallen leaves and farmland. Gap land between ditch is mainly distributed by farmland, then followed by vegetable plot, Green bush and grass in Summer with fallen leaves. Ditch land is mainly distributed by Green bush and grass in Summer with fallen leaves and farmland. Farmland mainly distributed in gap land between ditch, followed in ditch land s, ditch slopes land. Vegetable plot, orchard only between distributed in gap land between ditch. Deciduous broad-leaved shrubs, green bush and grass in Summer with fallen leaves, plantation mainly distributed in ditch slopes land, followed by ditch lands and gap land between ditch.

(4) In loess plateau hilly-gully region, other kinds of vegetation has its distribution in addition to deciduous broad-leaved forest. Ditch slopes land is mainly distributed by Green bush and grass in Summer with fallen leaves, followed by farmland, deciduous broad-leaved shrubs and plantation. Gap land between ditch is mainly distributed by farmland, followed by Green bush and grass in Summer with fallen leaves, deciduous broad-leaved shrubs and plantation. Ditch land is mainly distributed by Green bush and grass in Summer with fallen leaves and farmland, followed by deciduous broad-leaved shrubs and plantation. Evergreen coniferous forest is mainly distributed in ditch slopes land, followed by Ditch land, gap land between ditch. Evergreen coniferous and deciduous broad-leaved mixed forest is mainly distributed in gap land between ditch, followed by ditch slopes land, Ditch land. Deciduous broad-leaved shrub, plantations and Green bush and grass in Summer with fallen leaves mainly distributed in ditch slopes land, followed by Ditch land, gap land between ditch. typical meadow Mainly distributed in ditch slopes land, followed by gap land between ditch ,Ditch land. farmland is mainly distributed in gap land between ditch, followed by ditch land , ditch slopes land. Vegetable plot is mainly distributed in ditch land, followed by gap land between ditch, ditch slopes land. Orchards are mainly distributed in gap land between ditch, followed by ditch land, ditch slope.

(5) In Mountain valley area, vegetation type per unit area is the most, vegetation coverage is the most reasonable, landscape diversity is the

biggest and the degree of vegetation landscape fragmentation is the largest, followed by the loess plateau hilly-gully region, plat areas. In the loess plateau hilly-gully region, vegetation patch shape is more complex, followed by plat area, Mountain valley area.

Keywords: DEM; GIS; Vegetation; Topographic Differentiation