

Geographic Information System-Based Map for Best Suitable Place for Cultivating Permanent Trees in South-Lebanon

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Abstract : It is important to reduce the human influence on natural resources by identifying an appropriate land use. Moreover, it is essential to carry out the scientific land evaluation. Such kind of analysis allows identifying the main factors of agricultural production and enables decision makers to develop crop management in order to increase the land capability. The key is to match the type and intensity of land use with its natural capability. Therefore; in order to benefit from these areas and invest them to obtain good agricultural production, they must be organized and managed in full. Lebanon suffers from the unorganized agricultural use. We take south Lebanon as a study area, it is the most fertile ground and has a variety of crops. The study aims to identify and locate the most suitable area to cultivate thirteen type of permanent trees which are: apples, avocados, stone fruits in coastal regions and stone fruits in mountain regions, bananas, citrus, loquats, figs, pistachios, mangoes, olives, pomegranates, and grapes. Several geographical factors are taken as criterion for selection of the best location to cultivate. Soil, rainfall, PH, temperature, and elevation are main inputs to create the final map. Input data of each factor is managed, visualized and analyzed using Geographic Information System (GIS). Management GIS tools are implemented to produce input maps capable of identifying suitable areas related to each index. The combination of the different indices map generates the final output map of the suitable place to get the best permanent tree productivity. The output map is reclassified into three suitability classes: low, moderate, and high suitability. Results show different locations suitable for different kinds of trees. Results also reflect the importance of GIS in helping decision makers finding a most suitable location for every tree to get more productivity and a variety in crops.

Keywords : agricultural production, crop management, geographical factors, Geographic Information System, GIS, land capability, permanent trees, suitable location

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