Methodology for the Production and Updating of Agricultural Land Use/Cover Data Set

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SUMMARY

The Common Agricultural Policy (CAP) of the European Union has been dependent on Land Parcel Identification Systems (LPIS). Major spatial data content of LPIS are land parcels (cadastral parcels, physical blocs, farmer blocs, agricultural parcels or their combination) and ortho products (ortho imagery or ortho photos). Classification of land parcels depends on the need and extended use of the system for other purposes and thus vary country by country. In Turkey, similar development has been experienced since the beginning of 2000s. In terms of land use/cover classification in the establishment of LPIS like systems in Turkey, land parcel types (updated only by land owners if required by a land administration or management process) registered in the land registry system were used in the very beginning. Later the need to support the system with spatial land parcel data combined with ortho photo or ortho imagery in order to check land use/cover of land parcels declared to be used for agricultural purposes by farmers, has been raised. Later on, the need by many government institutions (including the Turkish Statistical Institute) or private companies for similar yet complete (in geographical extend, without depending only on declarations by farmers) data (on the amount and type of agricultural land) has come on the agenda. In this study, within a national project (no 112Y027) financially supported by the Scientific and Technological Research Council of Turkey, a methodology for the production and updating of Agricultural Land Use/Cover data set was developed and tested in a pilot study area which composed of three districts (Elagoz, Karahoyuk, Vatan) situated in Kocasinan County, Kayseri Province of Turkey. The methodology used in this study is essentially based on the delineation of fixed (over years) agricultural land boundaries which may be identified by trees, stones, infertile strip of land or other natural or man-made barriers which lie through boundaries. To assist in this boundary adjudication process two or more data sets of ortho imagery or ortho photo (ortho images of 2010 and 2013 in this study) were used. Additionally cadastral parcel boundaries were utilised as the supporting evidence (probability of any fixed boundary) in the cases when fixed boundaries were not be able to be delineated without any ambiguity. Agricultural land is classified by five very well defined land use/cover classes of (1) Fertile Land (including fallow land), (2) Planted Agricultural Land (orchard, olive grove, vineyard and other interpretable local trees), (3) Greenhouses and Fields with Protecting Cover, (4) Meadow and Grassland, (5) Abandoned Agricultural Field. Beyond the delineation of fixed agricultural boundary, the methodology incorporates strategies to determine un-fixed boundaries of non agricultural land in three additional classes (6) Small Pieces of Infertile Land which is

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Adjacent to Agricultural Land, (7) Infertile Land (rough, hilly, arid land), (8) Built-Up Areas and Development Regions. The methodology has been further refined in terms of boundary delineation with support of edge detection algorithms and infrared bands, and also in terms of updating procedures.