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Significance and purpose of use of geo information system (GIS) in soil science

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Abstract : This article is one of the main links of decision economics effective from the soils and land resources that are the basis of agriculture walking, organizing regular productivity control activities And it is designed to be applied in practice, and GIS technologies are described in detail made, unused GIS and their adjustment, computer cartographic data methods of collection, storage, processing, representation of soil science topics in GIS and review production such as production production based on their database. In my research work, geoinformation systems and technology in soil science dedicated to the development of fast modern information technologies the role of the document in learning is considered. Spatially distributed data, the most popular GIS is a general product of production and supply, data collection and updating procedures, their processing, soil science and transplanting from the ground store and use, get them. Internet and mobile systems, in GIS dispatch from remote sensing data. GIS in Sustainable Place Management application of technologies is considered in depth.

Key words : GIS, remote sensing, map, geodata, spatial object, polygon, point, internet, soil.

Introduction: Information technology and electronic in today's world community working with digital information is developing rapidly. At the same time, in recent years as a result of anthropogenic effects, changes in soil properties are increasing is going Therefore, the future is from land resources, which are an incomparable gift of our mother earth to organize the proper use of land resources so that our descendants can use them, it is necessary to maintain fertility, to constantly analyze the quality of our soil. We all know well that today's era is high technology, innovation is the time. The developed countries of the world produce not only many products production and bringing them to the market, but based on deep knowledge and scientific achievements is setting the task of transition to an innovative economy. That is, the existing natural economy not at the cost of spending resources, but at the expense of creating, mastering and advanced innovative products development by introducing technologies into production is the main factor of development is spinning. Information computer technology is a traditional research of soil experts will lead to fundamental changes in the process of carrying out their work, including creation of cartographic materials and also their analysis and from them is important from the point of view of use. There is a certain one in this place as the main source of information about the territory - maps in traditional paper format are additional and secondary materials of importance, rotation is recorded. Currently, together with maps, about a certain area storage of basic information in a digital format in the form of a spatial database is being implemented and these materials have new high potential it is ensured that it is kept in an active state with the help of technologies. For example, a moment of real time (online) about the location coordinates of geographical objects information on the location, identification and accuracy of the boundaries of these objects is received by space satellite systems that perform the input and this data through space imagery materials with a high resolution value and high-precision laser radiation carried out in field conditions with the help of technologies and other modern devices confirmed on the basis of measurement works.

The main part : The research carried out in the field of soil science includes terrain and vegetation cover the analysis of two main soil-forming factors works in field conditions and in room conditions consists of two 10 stages in the form of research. Soil cover The basis of differentiation (separation into structural parts) is the decisive role of relief and its confirm the morphometric description. Terrain from an ecological point of view significance - the exposure and steepness of the slopes, the degree of division of the relief, absolute and it is expressed by the influence of topographical factors such as the value of relative height. The soil is fertile plants characterized by their botanical composition and amount of precipitation coverage is important. Also with the

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process of soil formation which are related to one degree or another - level of illumination, temperature, soil composition and indirect effects such as air humidity level, soil water flows and, of course, bedrock a number of indicative factors can be distinguished. In soil science This is one of the main tasks of the field stage of research with the selection of test sample locations known as excavation points is dependent. Currently, research is being conducted for this purpose many times to the studied area to be studied by individual components it is necessary to carry out performances in repetition. And in the preparation stage - analysis of topographic maps is carried out. On a topological basis, from traditional methods using, pre-calculated by the researcher, exposure of slopes (situation condition) and slope level data are recorded. Then, the researcher carries out the designation of the excavation sites in the approximate description and after that, their study will be brought to the required area, where, theoretically, by observation, the excavation site the correctness of the state of designation is evaluated and, in the required situations, corrections are made to it. This is a long-term process, of course it is obvious how much time and expenses are required for its implementation thrown away. The development and development of geoinformation technologies (GIS) is at the top listed and also a large number of other tasks, in a word, cashier including. The use of GIS significantly improves the research carried out in soil science simplifies and is determined to be carried out in field conditions, as well as in room conditions allows to speed up the implementation of work. The analyzed area is the surface of the earth the implementation of specified works with the availability of specific modeling opportunities to significantly reduce the terms and volume and, in turn, material costs allows to reduce. Thus, the study of the soil layer in soil science in the process of theoretical and also from the practical point of view of geoinformation technologies the efficiency of use is sufficiently evident. Take note that is, data collection, analysis, modeling, etc. in soil science the possibilities of using GIS in the presentation of visual description on the data does not completely exclude the use of other methods of work.

Basic terms and concepts : Geoinformation technologies are the impetus of modern information technologies is one of the developing directions. Therefore, this technology and programs about the existence of generally accepted terms in the field of knowledge no final opinion is given. Understanding this relatively young industry for, quite a large number of definitions given by different authors and researchers can be cited: A spatial object is a point in a series of information layers with its geographic description, a storage object in the form of a line or polygon. Spatial object classes are from one type of geometry (point, line or polygon), has the same coordinate system and a set of common attributive columns a collection of geographic objects. A file geodatabase is a file on your computer saves in folders. Spatial Relationships and Spatial Rules - A set of features in geodata is the possibility of extended data modeling. Geodata can be used in geographic information systems (GIS). means information about the geographical location stored in the format. A geodatabase is a file-based collection of various geographic data sets stored in the systems public folder - in a Microsoft Access database or more in user relational databases (including Oracle, IBM, DBR, Postgre SQL, Informix or Microsoft SQL Server) data sets stored. The center (core) of the geodatabase is the standard of the database relational scheme (set of standard database tables, types of frames, indexes and other database, objects). GIS-design - including geographic information into thematic data groups takes the process of organizing the separation, that is, from the information about the geographical location layers that can be interconnected using Multipoints are spatial objects with more than one point. Multipatches are objects occupying a discrete area, appearances, three 3D used to represent a volume or external surface in dimensional space - geometry. Mosaic Dataset is a raster that quickly renders a raster catalog A data model that is a hybrid of a dataset and a raster catalog. Dataset tables are each data set in a geodatabase stored in one or more tables. Data to manage data control tables work with structural tables. Relationship class - attribute relationships are very widely used in GIS and they are all available in database management systems applications. They are rows of a table determine how they relate to the rows of the second table. MAX_FILE_SIZE_256TB – very large image to file geodatabase form keyword used in import. Points are very small objects that cannot be defined by lines or polygons used to display point-like spatial objects. Objects-dimensions are a special type of annotation, a specific distance or length shows (for example, the length of the side of a building and the area of the ground, or between two objects distance). Polygons are a representation of the location and shape of spatial objects of the same type a set of objects with a polygonal area. Systematic tables - show what each geodatabase consists of. They are showing all the relationships, definitions, and rules of the dataset they create

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(write) a geodatabase schema. A personal geodatabase is a Microsoft Access file on disk format .mdb. stores in The maximum size of a personal geodatabase is all limited to 250-500 MB for geodatabases. PERSONAL GEO DATA base can only be used by Windows platforms. Lines are shown as polygons, like the center lines of rivers and streets the shape and location of impossible, extremely narrow geographical objects used to describe.

References:

1. Reclamation of irrigated lands in Uzbekistan and their improvement. Tashkent, 2018.
2. ATLAS OF SOIL COVERS OF THE REPUBLIC OF UZBEKISTAN. Tashkent, 2010.
3. Recommendations on improving the physical and structural condition of irrigated soils in Uzbekistan. Tashkent, 2004.
4. A collection of "100 books" prepared in cooperation with the Ministry of Food and Agriculture of the Republic of Turkey and "Denizbank".
5. Methodological manual for assessing the productivity of dry soils of the Republic of Uzbekistan. Tashkent, 2014.
6. Bernhardsen, T. (1992) *Geographic Information Systems* Vitak IT
7. Davis, B.E. (1996) *Geographic Information Systems: a visual approach* OnWord Press
8. DeMers, M.N. (2000) *Fundamenatals of Geographic Information Systems* (2nd Ed) Wiley Heywood, I., Cornelius, S. & Carver, S. (1998) *An introduction to geographical information systems* Longman Jones, C. (1997) *Geographic Information Systems and Computer Cartography* Longman.