

APPLICATION OF REMOTE SENSING METHODS IN CREATING PASTURE LAND MAPS OF BOSTANLIK DISTRICT TASHKENT REGION

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ABSTRACT

This article provides recommendations on creating and updating pasture land maps using modern software.

KEYWORDS: Grassland, Crop Rotation, Geobotanical Research, ArcGIS program, Space Photos, Remote Sensing Materials

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INTRODUCTION

From the materials of geobotanical research conducted in pastures, it is used to determine the normative value of agricultural land areas, to determine the spread of medicinal plants in the pharmaceutical industry, to maintain a unified system of state cadastres, to develop land development projects, to cadastrally evaluate the nutritional properties of pasture plants, to organize the exchange of livestock in pastures. it is used in cultivation, rational use of pastures and development of measures for their protection.

The results of the geobotanical research work will be submitted by the “Uzdaverloyiha” institute to the district commission that considers the issues of granting (realization) of land plots. A separate geobotanical pasture map will be created for forestry lands.

Geobotanical research reports are prepared. The report provides brief information on changes in vegetation types and areas, the emergence of new types, degraded areas, and changes in productivity. In the pastures, the rotation of livestock pastures is developed for the purpose of their rational use and protection, reproduction and restoration.

Cattle grazing and haying are the norm and will be done according to the deadlines. The basic information for the organization of pasture rotation of livestock in pastures is obtained as a result of geobotanical research and grazing.

For desert, semi-desert and foothill pastures used for year-round livestock grazing, four complete pasture rotations are recommended using consecutive grasses according to seasons (1 area-spring, 2-summer, 3-autumn, 4-winter).

Table 1

The Year of the Change of Pastures	Areas of Pasture Exchange			
	1	2	3	4
1	spring	summer	autumn	winter
2	winter	spring	summer	autumn
3	autumn	winter	spring	summer
4	summer	autumn	winter	spring

One-time grazing in each area is carried out by dividing it into the next grazing plot. For mountain pastures used in the summer season, it is recommended to alternate grazing in three plots with a 3-year rotation. For pasture farms with large pastures containing several types of pasture, pasture rotation can be implemented by using pastures in different seasons. The pasture plots left for rest and grass growth serve as an insurance fund at the same time, that is, they are used for livestock grazing in years when grass growth is unfavorable. When organizing the rotation of pastures, the following requirements are taken into account for the design of the next grazing plots and areas:

- Homogeneity of next grazing plot and fields from soil and geobotanical point of view;
- Shape of next grazing plot and fields and ease of size;
- Relief, wind direction and polar aspects of the rotational grazing areas;
- Pasture infrastructure;
- The presence of an equipped watering point within a radius of 5 kilometers from livestock grazing areas.

Pastures can be given to permanent ownership, lease and temporary use by decision of local state authorities for specified purposes. Pastures can be used for the following purposes:

- Livestock grazing;
- Mowing hay;
- Collection of medicinal plants;
- Seed collection for the restoration of pastures;
- Planting pasture plants;
- Creation of grazing infrastructure.

Pasture users use pastures in accordance with the approved calendar-plan of pasture rotation, according to the period of livestock grazing and the duration of the season.

The ArcGIS program also has the ability to work on rasters, spatially connect them and perform analysis, in which, after digitizing a paper map using an existing electronic or scanner, actions are performed on the raster using ArcMap based on the sequence:

The ArcMap work window is launched;

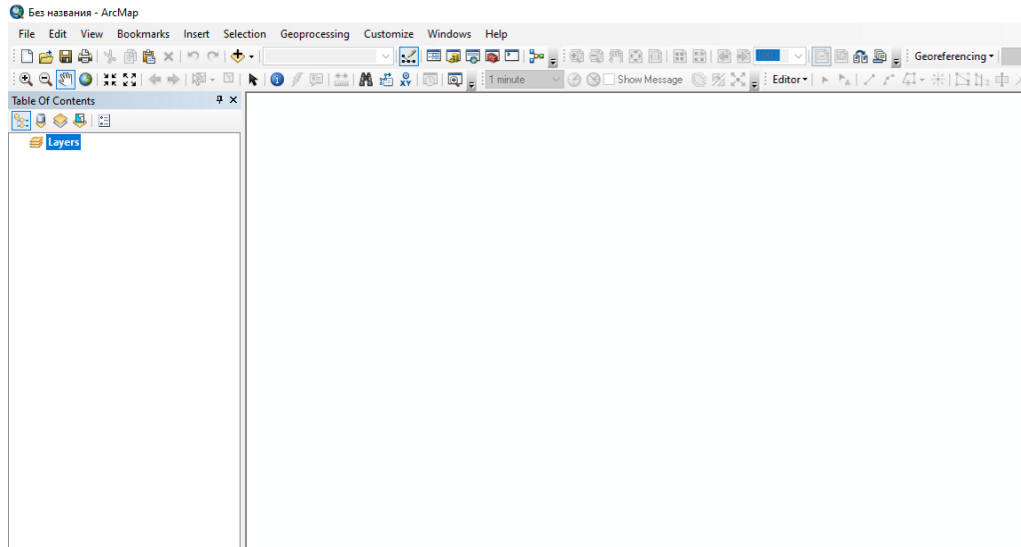


Figure 1: The Working Window of the ArcMap Application.

From the main toolbar of the ArcMap work window, the “Add data” button is accessed; A raster is selected from the resulting window and the “Add” button is clicked; A raster will appear in the working window.

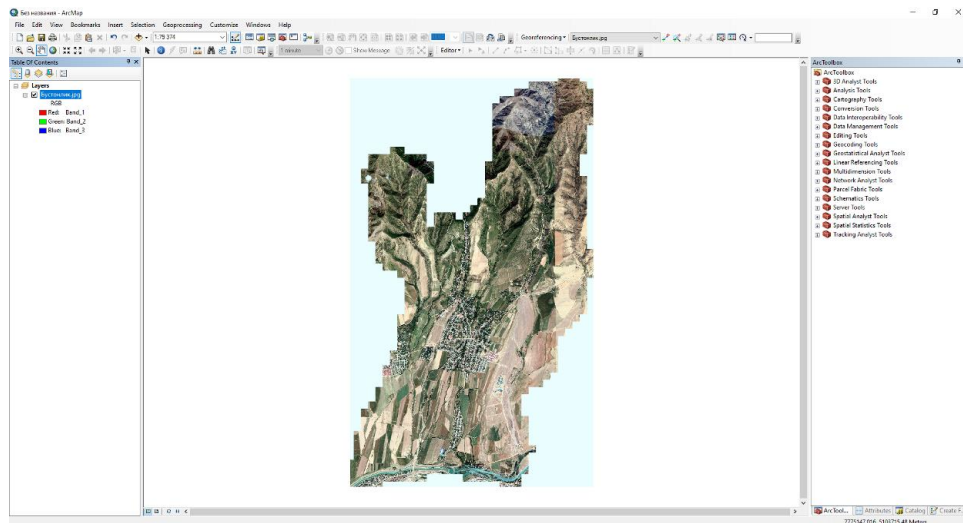


Figure 2: Raster Display in ArcMap.

When a raster is added to the ArcMap work window, it appears in the table of contents (Table of Contents) window. The right mouse button is clicked on the name of the raster shown in the list as thematic layer and the command “Special layer” is selected from the resulting menu, and this raster is displayed on the screen according to the extent of the working window.

To spatially connect the raster, the following sequence of actions is performed:

By right-clicking on the toolbar, the “Spatial reference” panel is activated from the list of inactive auxiliary panels;

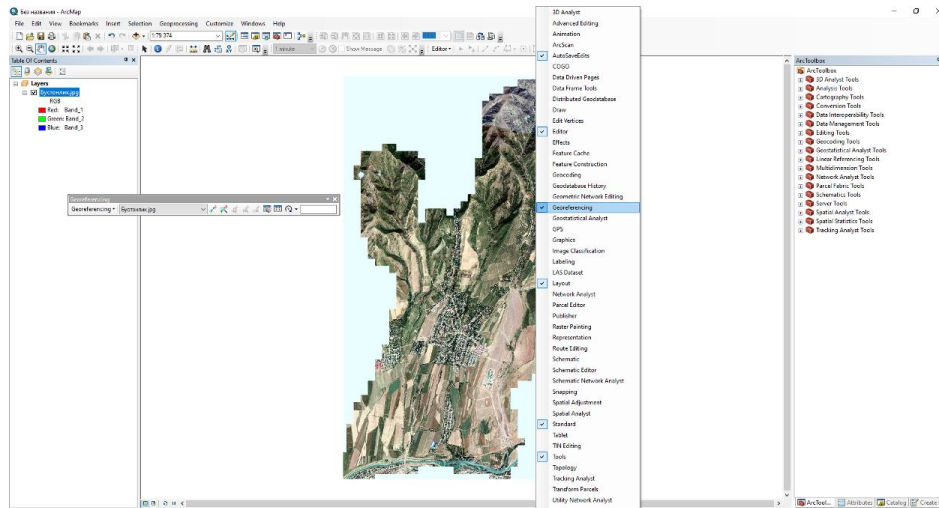


Figure 3: Activating the Geospatial Binding Panel in ArcMap.

Coordinate values are entered from the created panel using the *dobavit opornye tochki* button to the specified points of the grid using the coordinate input window; And the “OK” button is pressed; After entering the coordinates of each corner, click the right mouse button on the raster in the table contents window; From the resulting menu, refer to the “Zoom To Layer” command; Then this raster is displayed on the screen according to the extent of the working window; After the coordinates are entered, the command “Transform” in the “Spatial reference” panel is referred to; A window named “Save as” will appear in the working area; From this window, the name of the location stored in the permanent memory of the computer is indicated or selected in the item “Output location”;

The name of the raster is written in the place where it is necessary to write the name of the raster, and the raster format is selected, the “Save” button is pressed, and the spatially linked raster is stored in the memory.

Digitization of rasters is often required when forming thematic layers of the geoinformation system. In this case, raster data is converted into vector data.

The simplest way to generate vector data from a raster layer is to manually digitize vector objects from a computer monitor using a mouse or special cursors (in computer programs).

SAS Planet software products can be used for geospatial linking of satellite images. After defining the research area, it is stored in the computer memory and geospatially linked according to the instructions given above. Geospatial links are automatically added to the software if you specify link files during the download process. The advantage of the SAS Planet program is that it not only provides connecting points, but also provides the ability to download a whole district, region or larger area in high definition quality.

In order to create a geographic database in the ArcGIS software owned by ESRI, the ArcCatalog support of this software is used. When the working window of the ArcCatalog application opens, the required memory disk is selected using the Catalog tree.

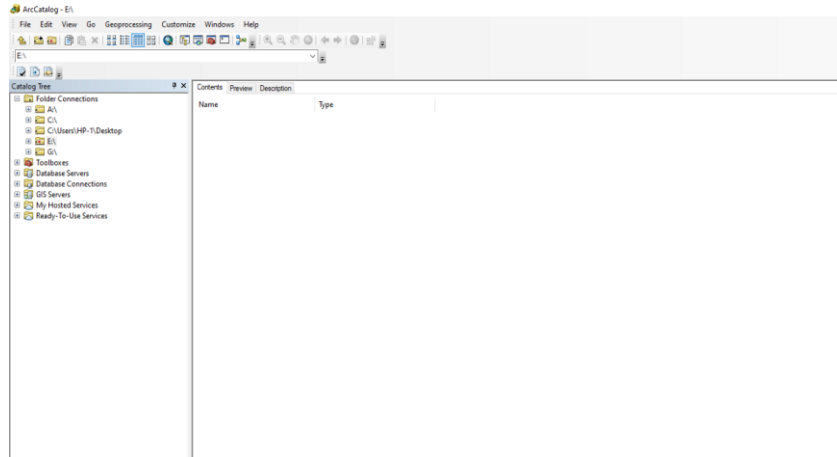


Figure 4: The Working Window of the ArcCatalog Application.

Right-clicking on the watch window will result in the helper bands of the watch window. Personal Geodatabase (personal database) in a new line is selected from the resulting auxiliary clause and a name is entered into it.

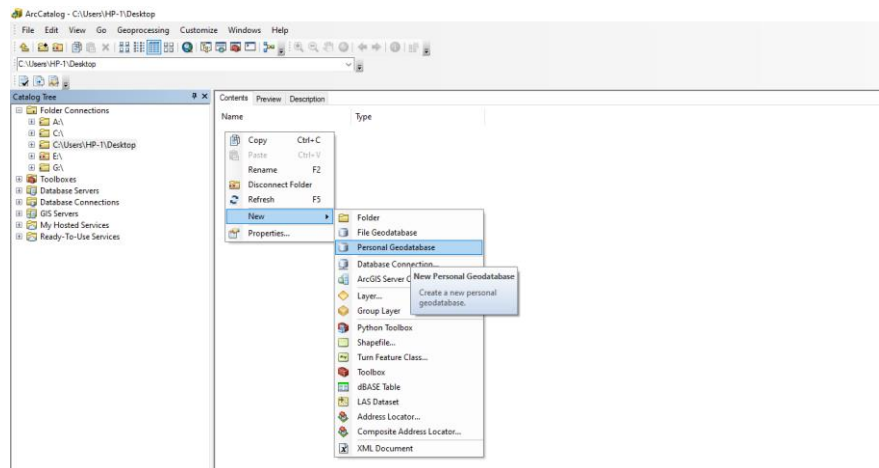


Figure 5: Database Creation Process.

Enter the created custom database and right-click on the Feature Dataset line. A name is entered in the resulting New Feature Dataset window and the next coordinate system is entered using the dale button. The sequence of the coordinate system is performed in the following order.

The zone corresponding to the selected area is marked, and after pressing the dale button twice in a row, the finish button returns to the Feature Dataset window.

Enter the resulting Feature Dataset and right-click again and select the Feature Class row.

If the name of the object is entered in the Name space of the created New Feature Class window, the type of layer is selected from the lines in the Type section depending on the type of layer. For example, Polygon Features are selected for the Area layer, Line Features for the line layer, Point Features for the point layer, and Annotation Features for the text layer.

After pressing the Dale button, a data table will open that provides information about the layer to be created. If the Field Name column contains information about the layer, the Data type column shows the type of water. For example: if the answer to the entered question is in the form of a word, the type in the Data type column is Text, if the question is about a date, then Double, if the question is about numbers, then Raster items are selected. Enter the number (50) indicated in the Length line of the Field Properties command located at the bottom of the window, the number of rooms to be placed for the answers to the questions listed in the Field Name column (for example, Name - 4 rooms, the number of rooms is not limited) and click the Finish button. In this way, the process of creating different layers is observed.

The ArcMap program of the ArcGIS platform will be launched. “Add data” button in the quick menu line is clicked. From the resulting window, the space image (files) loaded using the “SAS Planet” program observed in the 2nd step is selected, and by pressing the “Open” button, the raster layer is loaded into the content of layers.

The area is explored and thematic agricultural layers are created. With the help of the created thematic layers, the space picture is deciphered and conditional signs and attributive data tables are filled.

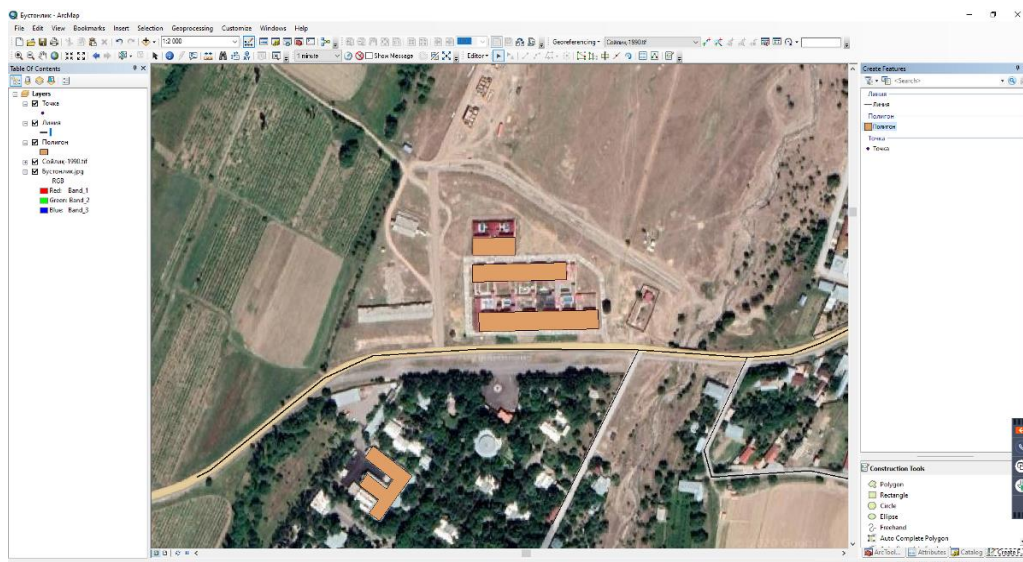


Figure 6: The Process of Vectoring the Cosmosurant.

In this way, full-fledged decryption works are carried out in the area. From the basis of the created electronic digital card, the layer in the form of a space photo is made inactive.

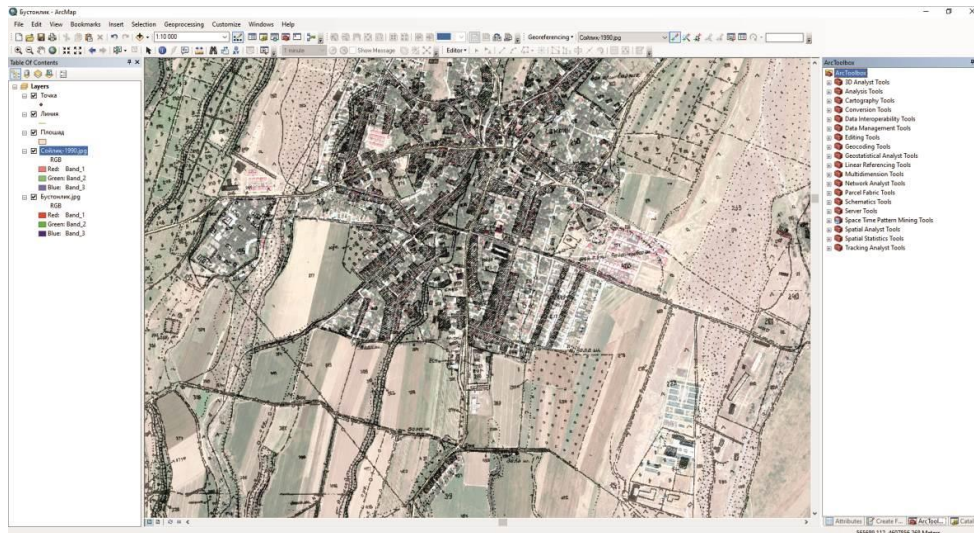


Figure 7: The Process of Updating Electronic Digital Cards using Kosmosurat.

Elevation points determined by the Global Mapper program are loaded into the layer content of the ArcMap program. The Arc Toolbox tool runs IDW analysis and automatically creates a surface based on elevation points. To automatically draw horizontal lines from the created surface, it is done using the “Surface-contour” command. 1:10 000 scale topographic map of created or partially renewed pastures can be published or transferred to another format unit. At the end of the work, by exporting the electronic digital map to another format unit and publishing it from the plotter, the results of satisfying the demand for topographic maps of pasture lands or providing cartographic material are achieved.

CONCLUSIONS

In this article, a number of theoretical and practical issues regarding the creation of electronic digital maps using remote sensing materials were considered in the creation of maps of existing pasture lands in the Bostonliq district of Tashkent region. Foreign research and experiences related to the topic were studied. The main results of scientific and applied research are as follows:

- On the basis of the field observation data, electronic numbered maps of pasture lands of the research area were created on a scale of 1:25000;
- A map of pastures and hayfields showing the state of water supply of pastures was created;
- Recommendations on geospatial linking and vectorization of cosmographs were given.

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