Design and implementation of topsoil image information database platform

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Abstract. Using component technology of the.net platform, the establishment of an area of topsoil image database management information system. This system mainly storage and query cultivated land in the form of image information data. It allows the user to intuitive understanding of the system information of cultivated land. To improve the management of land information management efficiency, improve agricultural scientific and normative.

Introduction

In the late 1990s, our country carried out a comprehensive land data, the overall planning of land management and land information systems, information systems for building land laid a solid foundation. The 21st century, humanity has entered the information age, development of the land information system is an essential part of the management of land and resources. The cultivated land information management, assessment of potential arable land, and both are elements of land resources management. Cultivated land evaluation results data is complex, the survey results are poor, it is difficult to quickly carry out investigation and analysis, and even errors, a serious impact on the efficiency of land management.

In this paper, create an image database of arable land management information system, rendering the corresponding image data to enhance user understanding of the data, enhance memory. In the land consolidation plan also includes various reports, statistical graphics generation, these data are included in the basic graphical data, but these data are implicit in the AutoCAD drawing database, a single query is very convenient, but a lot of statistics very time consuming. Therefore, the establishment of a new report, statistical graphics database system, become more and more important.

Analysis of image database

Target analysis

Land management information system of image database, mainly is to image storage and query somewhere cultivated land information data. It allows the user to intuitive understanding of the system information of cultivated land. Managers improve the efficiency of information management on arable land, improve agricultural scientific and regulatory work.

Image database technology has been committed to solving the effective mass of digital image storage and management problems. It is the inheritance and development of database technology. On the one hand, the image data and text data exist essential differences. The traditional database technology can be successfully applied in the field of text data. if the static field copied to the image database, the result is often inefficient or ineffective; on the other hand, many of the results of traditional database, such as the SQL language, indexing techniques, etc., are worth images reference database. The above two aspects combined to become currently the mainstream in the development of image database technology. Image database than traditional text database has more advantages: combining with the multimedia technology is a new technology. Not only by traditional

methods to store data, but also by the method of multimedia technology for image access operation.

Analysis of image content

Cultivated Land Management Information System in accordance with the image database requirements, the image data of the database include the following:

Soil type map: Including soil type, the area occupied by all kinds of soil, the proportion of various types of soil and other information.

Soil nutrient map: Including soil nutrient content, the proportion of various types of nutrient total contrast, and various other areas in various parts of information.

Trace elements map: contains manganese, iron, copper proportional distribution of trace element content of the various regions, comparing the distribution of the total content and other information in various regions, and each region.

Land use map: contains various land use area, the proportion and distribution of information.

Irrigation water information map: Includes various regions irrigation water content of various elements, the proportion of other information.

Water conservancy facilities map: Including number of water conservancy facilities in various regions, the share of each region the proportion of water conservancy facilities and other information.

Social INFO: contains the population distribution, the proportion of other information.

Assessment information map: Includes soil nutrients, soil management, cross-sectional assessment of physical and chemical properties and other information.

Design of Database

Overall Structure Design

Database system mainly consists of soil information image, images of land information, water conservancy information image, social image information, evaluation of five modules: image information. Database editing functions in each module view sub modules are implemented, such as Figure 1:

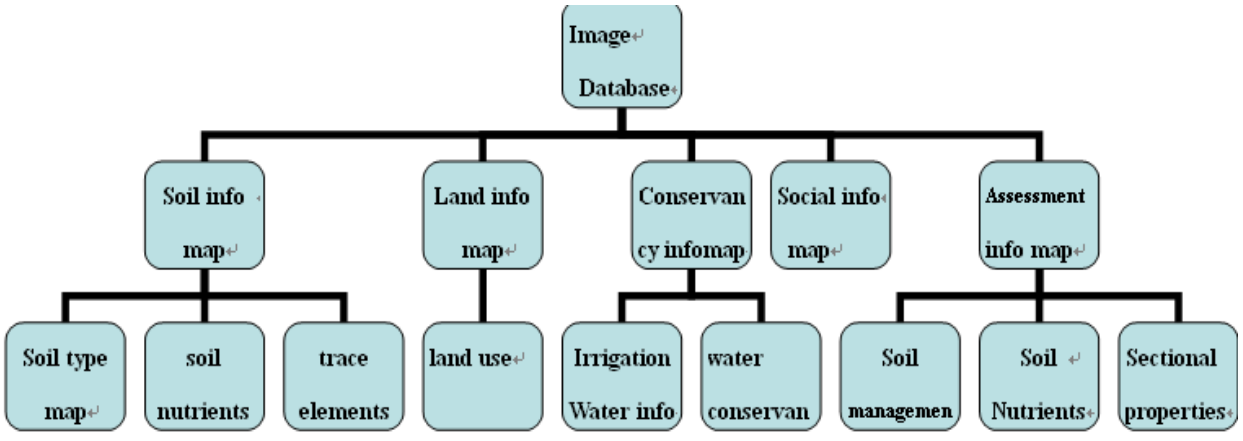

Fig. 1 Image Database Chart

Editing Process

- Open Visual Charting, select the type of chart to be established;
- Click Import EXCEL, browse the selected table arable land information table to be imported;
- According to the wording of the query sequence data retrieval;
- Set chart common properties;
- Save the image, set the save directory, image format, the output size;
- Create a system image with the .NET library.

EXCEL retrieve data query sequence

(1) a single sentence, a single data series. Such as: select location, available Mn from [Sheet1 $].

(2) multiple statements, multiple data series. Such as select location, available Mn from [Sheet1

$]; elect locations available iron from [Sheet2 $]; select locations, effective copper from [Sheet3 $], as shown in Table 1; output image shown in Fig. 2 and Fig 3.

Table 1 Trace Elements comprehensive comparison table

Area	Available Mn	Available Fe	Available Cu
BJL	9.69	3.98	1.55
BJ	11.29	3.86	1.43
BH	7.56	3.89	1.37
CG	7.04	4.95	1.39
HJ	7.86	2.63	1.6
NAX	10.53	4.28	1.36
NAZ	8.54	3.17	1.42
QG	12.3	4.43	1.46
QSK	16.81	6.09	1.17
SG	14.58	1.39	1.34
WJT	8.16	5.39	1.42
WS	7.6	2.54	1.51

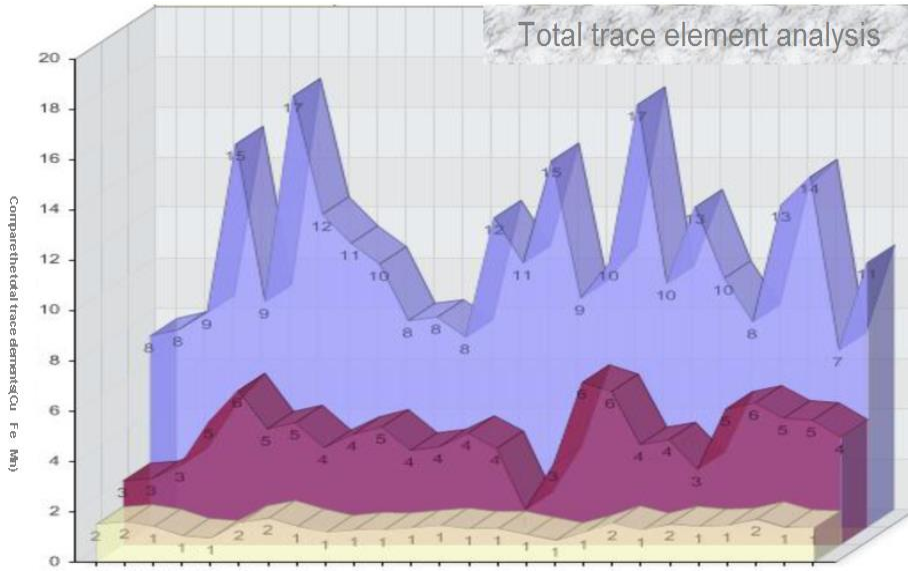

Fig. 2 Comparison of soil trace elements integrated bar chart

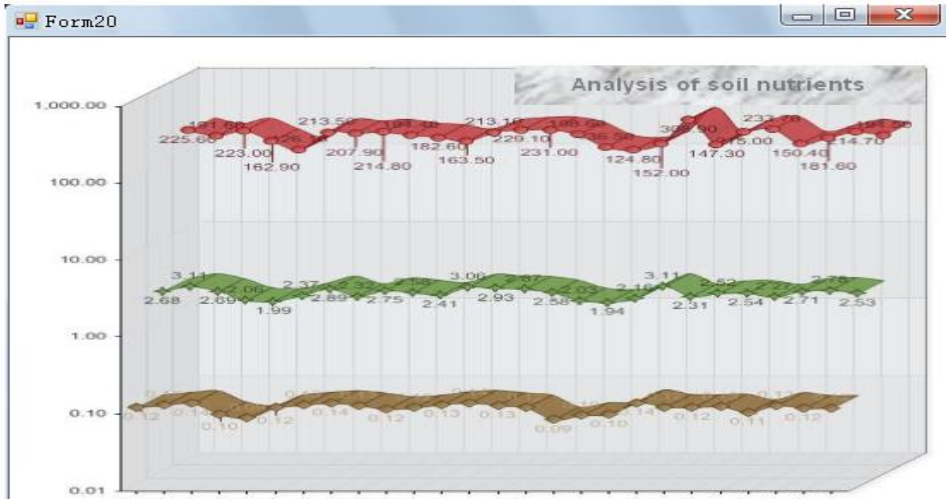

Fig. 3 soil nutrient analysis chart

System implementation

The main role of the system is to query and analysis functions of the system, and large amounts of data and results, difficult to understand and contrast, impact of land management and use, images of implicit information is intuitive, feature rich, and human graphics natural ability to understand.

Create a system interface, menus and sub-module through .NET, cropland management

information systems to achieve image library.

Conclusions

This system is based on the actual situation and specific content, according to certain requirements, scientific and rational system analysis, design, including menu design, query, delete, and other designs. So that the system can meet the requirements of economy, flexibility, reliability and systematic. Its characteristics are:

- clean, consistent, convenient operation;
- graphical interface, highlighting the aesthetic characteristics.

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