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Reflection on the Implementation of the Third National Soil Census

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Abstract

This year is the first year for the comprehensive implementation of the third national census work. More than half of the counties and cities in the country will carry out census work, and the census work is facing severe challenges of "more or less, one higher and one lower". In order to complete the census task with high quality and level, technology should be taken as the support, and the soil census work should be planned and designed in a coordinated manner. Key tasks such as sample verification, field survey and sampling, indoor testing and analysis, data review, and result summary should be completed, and the entire process quality control should be strengthened. The summary of basic and application results should be done well to ensure that the results of this census serve the long-term development of agriculture and rural economy with high quality in the future.

Keywords

The Third National Soil Census; Key Tasks; Quality Control; Summary of Achievements; Technical Support.

1. Introduction

Combining soil property census with soil utilization survey, combining field survey observation with indoor testing and analysis, combining soil surface sampling with key profile collection, identifying soil obstacle factors and proposing improvement and fertilization measures, combining government leadership with professional support, unifying census work platform, unified technical regulations, unified work base map, unified planning and layout of sampling points, unified screening of testing and laboratory professional institutions Unified process quality control, in accordance with the organization and implementation method of "unified leadership, departmental collaboration, hierarchical responsibility, and participation of all parties", will achieve a comprehensive understanding of soil quality in arable land, gardens, forests, grasslands, and other soil areas nationwide by 2025, laying a solid foundation for maintaining the red line of arable land, protecting the ecological environment, optimizing agricultural production layout, and promoting high-quality agricultural development. How to effectively organize census work, implement various measures, and ensure timely, high-quality, and efficient completion of census tasks is an important issue that needs to be considered and planned at present.

2. Overall Planning, Design, and Census Work

The soil survey task is heavy, with multiple links and long chains, high requirements, and tight time constraints. At the same time, facing the reality of limited professional team resources and expert resources, how to complete the survey task with high quality under existing resources requires soil survey offices at all levels to do a good job in top-level design, systematic planning, and overall implementation. The key is to focus on two planning and coordination: at the

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provincial level, we should focus on task planning and coordination, and reasonably plan and arrange the census work based on the existing resource strength and ability level of the province. Especially, we should combine the actual agricultural production of each census county, arrange the tasks of each census county, clarify the time table and operational map, and ensure the reasonable allocation and efficient utilization of professional team resources, expert resources, etc. within the province. At the county level, efforts should be made to coordinate the various links, including sample point verification, field investigation and sampling, indoor testing and analysis, and data review in each census county and urban area. Especially, while carrying out the work in the previous link, preparations for the next link should be initiated to ensure the progress of each link and avoid poor connection and decoupling of work during the pilot period, which may affect the work progress. During the pilot period, some pilot counties did not synchronously prepare for the bidding confirmation of testing laboratories, technical training and training of testing personnel during field survey sampling, which affected the progress of later testing. Additionally, when sampling teams conducted field survey sampling, on-site quality supervision and inspection had to be carried out synchronously. Some pilot counties did not make overall arrangements for work, especially did not specify the tasks and time requirements for expert on-site supervision and inspection, Causing inadequate quality supervision and tracking.

3. Organize the Implementation of Key Census Tasks

According to the requirements of the "Plan", the key tasks of this year's census include sample point verification, field survey sampling, indoor testing and analysis, data review, and result summary. To ensure that the key tasks of the census are implemented with quality and quantity, the key is to achieve "two enhancements": strengthening the main responsibility, and different key tasks of the census have different responsibility subjects. It is necessary to clarify the responsibility subject, responsibility area, and responsibility division for each key task, as well as the basic conditions and abilities, work requirements, and technical requirements that the responsibility subject should possess. Especially for county-level soil survey offices, they should be more aware that census work is the top priority of current work and must not be the "hands off shopkeeper". They should deeply participate in technical guidance services, supervision and inspection of census work to ensure the quality of census work, as census data and results serve more for the development of county-level agriculture and rural economy. In terms of sample point verification, the provincial-level soil census office is responsible for organizing expert verification, and the county-level soil census office cooperates in conducting on-site verification. In terms of field survey sampling and indoor testing and testing, the county-level soil census office organizes, and the field survey sampling team and testing laboratory carry out specific implementation. The county-level and provincial-level national soil census offices are responsible for technical guidance and quality supervision and inspection; In terms of data review and achievement summary, county-level soil survey offices are responsible for technical guidance and quality supervision and inspection at the provincial and national levels. Strengthen the time nodes, and soil survey offices at all levels should prepare a time schedule based on the annual completion goals and tasks, implement a reverse schedule, clarify the final deadline and time nodes for each link, achieve seamless connection of each link's time nodes, and ensure that all key tasks are completed on time.

4. Grasp the Whole Process Quality Control Quickly and Firmly

The lifeline of census data is data quality. The main links for generating data in the census are field survey sampling and indoor testing and analysis, which are precisely the two links where there are many participants and the technical strength is relatively weak. It is necessary to take

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different quality control measures and focus on quality control work. The key is to achieve "two clear": clarify the responsible parties, and census quality control is not a matter of which link, but requires full control of each link; It is also not a matter of which subject needs the concerted efforts of all subjects. The core is to compact the four responsibilities, that is, the implementation unit, including the sampling team and the testing laboratory, as the source of data generation, should effectively implement the internal quality control measures and requirements to ensure the quality of source data: the county soil census office, as the "first pass" of the external quality Supervisory control of census data, should effectively give play to the advantages of being familiar with the actual situation at the grass-roots level, Strengthen process quality control and data review; The provincial-level soil survey office should play the role of provincial-level experts and quality control laboratories, and implement various measures for quality supervision and inspection; The National Soil Census Office should play the role of national experts and national quality control laboratories, strengthen quality supervision and spot checks, and do a good job in quality control. The core of clarifying quality control requirements is to achieve the "four persistences", that is, to adhere to process control. Data quality control is not only about supervising and inspecting the final data results, but also strengthening quality control of the process of data generation. Adhering to source control, paying special attention to the control of data production sources, and ensuring the quality of source data can achieve twice the result with half the effort, reducing data rework in implementation units and saving production costs, Reduce the pressure on quality control at the county, provincial, and national levels; Adhere to front-end control, and the quality control of census work should highlight front-end quality control. Try to identify problems with sampling teams, testing laboratories, and other implementation entities in the early stage, and promptly organize experts to rectify problems. Eliminate census problems in the early stage, and avoid problems discovered in the later stage, which may result in late rectification or high rectification costs; Adhere to synchronous control. In the process of quality supervision and inspection, some links, especially the field survey sampling link, must be implemented synchronously with external survey sampling in order to truly identify problems.

References

[1] Jiawei Y,Xiongfei G,Mengyu L, et al. Cross-system legacy data applied to digital soil mapping: A case study of Second National Soil Survey data in China[J]. Geoderma Regional,2022,28.

[2] Results of Soil Survey for Environmental-friendly Agricultural Regions in 2018[J]. KOREAN JOURNAL OF SOIL SCIENCE AND FERTILIZER,2019,52(2).

[3] Z. L,C. S,D. W, et al. Reevaluating the effects of soil organic matter and other properties on available water-holding capacity using the National Cooperative Soil Survey Characterization Database[J]. Journal of Soil and Water Conservation,2018,73(4).

[4] Cunha D C A S,Da L M S. GIS applied to the soil survey in the city of Inconfidentes-MG[J]. Revista Brasileira de Geografia Física,2016,9(1).

[5] Aitkenhead M,Coull M,Towers W, et al. Prediction of soil characteristics and colour using data from the National Soils Inventory of Scotland[J]. Geoderma,2013,200-201.