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Application of Remote Sensing Technology in China's Third Agricultural Census

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Introduction

- With three years' hard work of millions of statisticians and census workers, the China's Third Agricultural Census has come to a complete success.
- The Third Census witnessed a comprehensive improvement in surveying technologies by using remote sensing, handheld intelligent terminals (PDA) and direct network reporting

1. Remote sensing application in China's Third Agricultural Census

1.1 China's home-produced remote sensing satellite data was fully used.

- The high-resolution remote sensing images produced by China were used in cropping area measurement and field survey.
- The moderate-resolution images were used as the main data source of cropping area measurement at the provincial level.

1.2 Remote sensing technology was used in the construction of the spatial sampling system.

- At the provincial level, a high-resolution satellite remote sensing database was established
- A sampling frame accurate-to-the-parcel was created for the first time for agricultural statistical survey.



GF-1 True Color of 2m/8m fusion, Northeastern Plain, China

1.3 PDA and unmanned aerial vehicle (UAV) were used in the Census.

- A full set of field survey software with convenience and high efficiency were developed for the field investigation.
- In practice, investigators used PDA to collect information of samples
- Meanwhile, the UAV was used to obtain the full image of some sample villages or sample plots to derive data on the type of the planted crops and their acreage.

1.4 A multi-level remote sensing measurement method was designed.

- The crop types and the acreage of each crop for each sample plot were interpreted from high-resolution remote sensing images.
- The provincial crop acreage was obtained from the moderate-resolution satellite images.
- These data were then combined with the filed survey data to extrapolate the acreage of main crop types for provinces and major grain-producing counties by using statistical models.

1.5 we conducted extensive technical trainings and service outsourcing.

- The Chinese government organized many technical trainings on new remote sensing technologies, such as UAV pilots training, which produced an UAV flying team for the statistical investigation system.
- Another innovation in the Third China Agricultural Census was the outsourcing of remote sensing measurement service.



2. Advantages of Remote sensing application in the Census

2.1 The application of remote sensing technology has the advantages of clear operation process, accurate positioning, high objectivity and effective data management, which helps to improve the frequency and timeliness of agricultural surveys.

2.2 It used to take at least two days to measure a sample village when the tool was a tape, while with PDA, most of the villages can be finished within just one day. If the measurement is carried out by an UAV flight, only 50 minutes is needed to complete a village investigation in addition to the preparation time.

2.3 From the perspective of survey accuracy, objectivity was realized in the investigation of the samples.

3. Experience gained of Remote sensing application in the Census

3.1 More input should be given to agriculture and rural statistics.

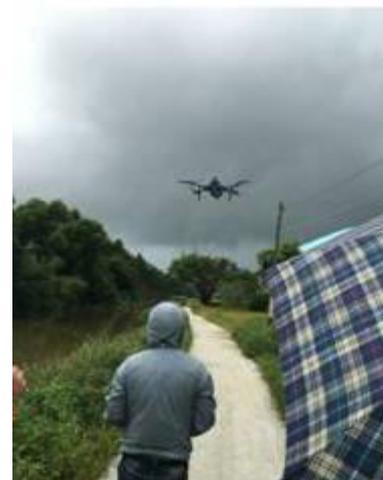
- The input should be increased to phase out traditional manual data reporting and introduce more modern information equipment, to improve the capability in the acquisition, analysis and utilization of data.

3.2 The creative use of modern information technology should be promoted.

- The rapid development of modern information technology has brought great opportunities to agricultural statistics. Statistical sampling techniques should be combined with information technology to build a modern agricultural statistics system, broaden agricultural statistics investigation methods, improve working efficiency and improve survey data accuracy.

3.3 The capacity building of agricultural statisticians should be given more attention.

- In the information age, the requirements for agricultural investigators' ability are getting higher and higher. We need more multi-faceted talents who have both technology savvy and professional agricultural census knowledge.
- we need to provide more training on agricultural statistics information technology, agricultural big data and so on, to improve the statisticians' ability in using information technology.



Thank you