

Quality control of NFI in China

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Promoting and Strengthening
Multi-purpose National Forest Inventory System
In the Asia Pacific region in connection with climate change

Forest Resources Update & Measures of NFI Quality Control In China

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Forest Resources Update

Significant achievements have been taken since 1949, benefit from great importance of forestry attached by the government and national strategic acts supporting forestry development.

Forest resources in China is playing more and more important role in mitigation of global climate change and maintaining the ecological safety.

Forest Resources Update

According to 7th NFI (2004-2008),

- Forest area: 195 million ha, forest cover: 20.36%, and forest volume: 13.72 billion m³
- Plantation area: 62 million ha, and volume: 1.96 billion m³
- According to assessment result, the Carbon storage of the forest vegetation: 7.81 billion tons

Forest Resources Update

- Forest area:
rank No. 5 in the world
- Forest volume:
rank No. 6 in the world
- Plantation:
rank No. 1 in the world

The first bar chart shows forest area in million hectares (mha) for Russia (~800), Brazil (~500), Canada (~300), USA (~250), China (195), and Australia (~100). The second bar chart shows forest volume in billion cubic meters (billion m³) for Brazil (~80), Russia (~75), USA (~30), Canada (~25), DR Congo (~20), and China (13.72).

Forest Resources Update

Characteristic

The continuous increasing total amount of forest resources, improving forest quality, and enhancing forest ecological functions and carbon fixation show that **forest resources step into the fast developing period.**

Issues

2 Development of NFI in China

Development of NFI in China

- The sampling inventory techniques were introduced in 1964. The methods including stratified sampling, two/three phases sampling and double-sampling were gradually popularized. The methodology based on plots survey and precision control is established.
- Inventory at National level was initiated aiming at identification of national-wide forest resources, through setting up ground fixed plots in relevant provinces in 1973.
- The total of 7th inventory have been finished, the 8th NFI was started in 2009, and will be end in 2013.

Development of NFI in China

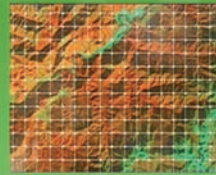
- The inventory area cover the whole country, the number of the fixed ground plots reaches 415,000, 2.844 million RS plots
- The equal-distance systematic sampling is applied in each population
- High techniques & tools including RS, GIS, GPS and PDA are widely applied in NFI
- The inventory quality and efficiency in terms of field measurement, data management and information analysis are largely enhanced.

Development of NFI in China

Methodology

▶ ground plots

Fixed on the intersection point of X, Y-coordinate in kilometer unit.



Development of NFI in China

Methodology

▶ Intensity of plots

Decided by the required estimate precision of forest land area, growing stock, plantation area, amount of growth and consumption, and net increase amount of trees volume in the specific population.

In general, distance per plot from 2*2km to 8*8km.

▶ Shape and Size of Plots

Shape: Square (generally) and rectangle.

Area: 0.06-0.1ha, 0.0667ha(generally).

Size : 25.8*25.8m for 0.0667ha square plots

Development of NFI in China

Organization and Management

NFI is deployed by the State Forestry Administration (SFA), and implemented by the Department of Forest Resources Management, SFA, and cooperated by the provincial forestry administrative agencies and the regional forest resources monitoring centers.

Technician: About 20,000.



Issues

3 Measures of NFI Quality Control

Measures of NFI Quality Control

1 .make plan and specification PREPARATION

- Building up the mechanism of inventory working scheme and technical scheme review, and approval of provincial technical specification for plots survey, which assures the scientific of inventory technical documents.

Measures of NFI Quality Control

- ◆ Provincial forestry agencies responsible for preparation of above schemes and specification, and provincial review.
- ◆ Regional monitoring centers review above schemes and specification.
- ◆ SFA approve to start provincial inventory, according to the review results.



Measures of NFI Quality Control

2. SETUP TEAM AND TRAINING

- Implementing the system of inventory technical team setup and training effects assessment, which ensures job skills of technician

Measures of NFI Quality Control

- ◆ Provincial forestry agencies setup the inventory team, organize technical training and award work license for inventory, insisting on the principal of professionals.
- ◆ Regional monitoring centers review the provincial technical team composition and evaluate technical training effects.



Measures of NFI Quality Control

3. guiding check and quality assessment check

- ◆ The regulation of **first-piece-inspection** is carried out during guiding check, namely the survey results of first ground plot for each group (including 2-3 persons) must be checked.
- ◆ The regulation of **three-level quality check** (including inventory team, provincial and national levels) is implemented during quality assessment check of field visit, the checked plots number is clear stated.
- ◆ The **specific criteria & standard of quality evaluation and specification** for rewards and penalty are prepared to comprehensively assess the quality of field visit at plot level and the whole inventory work.


Measures of NFI Quality Control

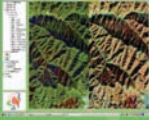
4. results review & argumentation that make certain of inventory report quality

- ◆ Regional monitoring agencies are responsible for data analysis and provincial report preparation.
- ◆ Three-level review system including preliminary review, second review and final review is respectively carried out by regional monitoring agencies, experts group of NFI, and launching expert consultation meetings.
- ◆ Establishment of preparation, examination, approval and release system of **nationwide statistics** every five years

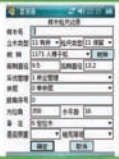
Measures of NFI Quality Control


5. high technologies application

 GPS and GIS are applied to **automatically collect position of plots and visit track** to make sure plots positioning and revisit quality.

 Satellite images-based plots are set up and interpreted to analyze the spatial distribution of forest and control the sampling precision of dominant inventory indicators.

Measures of NFI Quality Control

 The integration of PDA, GPS and GIS are applied to **save the plot revisit time, and realtime check of collected data about plot & trees** to in-situ resolve the issues on measure error or missing indicators .

 Modern survey machines like Laser Rangfinder are gradually introduced to enhance the measured precision.

Measures of NFI Quality Control

The quality and level of inventory are efficiently ensured, due to **strengthen quality control with a series of action and countermeasure**. Both of revisited plots percent and re-measured trees percent are above 98% during previous NFIs.

The inventories results always track the process of forestry construction since 1970s, and impersonally image the latest achievements of forest reform and development in China in different stages.

Issues

4 Suggestion on NFI Quality Control

Suggestion on NFI Quality Control

High importance of regulation building, taken it as the main issue of NFI system development

Promotion of modern survey techniques and machines to enhance inventory quality and efficiency

Could FAO develop common guidelines of inventory quality control, and promote in the national forest monitoring and assessment project?

