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The 21st International Grassland Congress / 8th International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

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Mapping and monitoring Inner Mongolia rangeland based on remote sensing

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Key words : rangeland , remote sensing , mapping dynamic monitoring

Introduction Liu Jiyuan (1995) has published methods for surveying and researching resources in China in a macroscopic scale using remote sensing technology (RS) . Data of state and change of rangeland resources can be obtained rapidly and accurately by applying the method of field measurements and RS material , which would provide help when making rangeland management decisions .

Methodology More than four kinds of indicators were specified such as major species , production and plant cover , as well as change in ratio of selected plants . Some important information has been extracted based on 3S technology . A base map of 1 : 0 . 1 million and 1 : 0 . 25 million has been set up , based on more than three thousand orientation data points collected through field measurement , and the corresponding relationship between the field data and RS material has been established . We then used software such as ARC/GIS, ENVI etc . , to map distribution of rangeland types , and calculate and analyze changing trend in the rangeland area , and evaluate rangeland quality .

The result and discussion As result of the Study , the area and map of 8 types were obtained (Tab .1) , and mapping precision is above 90% and production estimating precision is more than 80% . The study also showed that due to non agriculture uses and overgrazing , rangeland area has decreased more than 3810500 ha since the 1980s(Tab .2) , production has dropped by 21 . 58% , and the degraded area of rangeland has increased 35 . 6% .

Table 1 Stat. table of rangeland area of Inner Mongolia .

Types	Rangeland area(ha)	Unit yield (kg/ha)	Types	Rangeland area(ha)	Unit yield (kg/ha)
Meadow steppe	758 .88	1479	Desert	1750 .3	261 .9
Typical steppe	2513 .23	774 .75	Meadow	965 .41	1672 .05
Desert steppe	1068 .23	437 .85	Swamp	14 .63	2213 .85
Steppe desert	380 .71	392 .85	Hilly meadow	47 .99	2848 .65

Table 2 Change dynamic of area .

	80s	2003	Compared with 80s	
			Change	Ratio
Area(ha)	7880 .45	7499 .39	-381 .05	-4 .84%
Unit yield (kg/ha)	1068 .75	838 .05	-230 .7	-21 .58%

Conclusion and discussion The study has provided a background database of 12 Leagues and 101 Banners of Inner Mongolia and will provide a basic platform for digital rangeland monitoring .

Reference

Liu Jiyuan . The study on survey and monitoring of Chinese resources [M] .Beijing :Publishing Company of China Science and Technology ,1995 .61-110 .