Effect of Sod-Production on Soil Qualities in Beijing Areas

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Effect of sod-production on soil qualities in Beijing areas

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Key words : Sod-production ; Soil quality ; Soil fertility ; Soil structure ; Soil texture

Abstract Two sod-production farms were investigated to make it clear how sod production effects on soil quality . The results showed that the soil chemical property had not been influenced by sod-production . From the observation of soil profile , about 10cm fertile topsoil was taken away by 7 years sod-production on Dongbeiwang Nursery . Compared with the control , the bulk density of topsoil was increased and the porosity was decreased on both nurseries . It means the topsoil in the production of sod became compact , which was mainly caused by rolling . The results of particle size distribution showed that sod-production had no effect on the improvement of soil structure .

Introduction Sod is a common material for turf establishment . The fast development of sod production has been taken place in Beijing Areas since 1990 . There are about 200 sod farms covering about 250 hectares . With the coming of 2008 Olympic Games , about 80% of turf is established by sod in Beijing now . In order to evaluate the effect of sod-production on soil quality , two typical sod farms in Beijing Areas were investigated to compare the soil physical and chemical properties with other farms .

Materials and methods Dongbeiwang Nursery (DN) and Changping Xiaotangshan Nursery (CXN) were investigated . These had been in sod-production for Seven years and two years , respectively . The representative soil samples were collected for analysis of soil chemical and soil physical properties . Soil profiles were evaluated on two nurseries .

Results and discussion The soil pH was 8 .38-8 .57 . The results of organic matter , soil available nutrients and cation exchangeable capacity (CEC) showed that there was no significant difference between sod plots and tree plots (as Control) on two nurseries . The description of soil profiles on DN was shown in Table 1 . About 10cm fertile topsoil was taken away by 7 years sod-production on DN and no difference was observed on CXN . Compared with control , the bulk density of topsoil was increased and the porosity was decreased on two nurseries (Table 2) . The significant difference was observed on DN . It means the topsoil in the production of sod became compact , which was mainly caused by rolling . The results of particle size distribution showed that sod-production had no effect on the improvement of soil structure . To make comprehend-sive and accurate evaluation , further research should be done , such as the change of soil microbe in sod-production .

Table 1 *Description of soil profiles (0-50cm) on Dongbeiwang Nursery .*

Site	Soil Layer(cm)	Description of soil characteristics
Sod Plot	0—15	Dark Brown , Light Loam , More Roots
(7years)	15—25	Brown , Light Loam , Fewer roots
	25—50	Yellow Brown , Medium Loam , Very Few Roots
Tree Plot	0—35	Brown , Light Loam , More Roots
(Control)	35—50	Yellow , Medium Loam , Fewer Roots

Table 2 *Bulk density and total porosity of topsoil (0-20cm) on two nurseries .*

	Site	Bulk Density (g/cm^3)	Total Porosity(%)
DN	Sod Plot (7years)	1 .66±0 .09a*	36 .9±3 .4b
	Tree Plot (Control)	1 .42±0 .06b	46 .0±2 .5a
CXN	Sod Plot (2years)	1 .60±0 .06a	38 .4±2 .2a
	Tree Plot (Control)	1 .52±0 .07a	41 .7±2 .9a

* Note :Different letters in the same row indicate significantly difference at $p<0.05$.

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