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Study on the relationship between scirpus planiculmis grow and Soil salinity

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Abstract

Abstract. Through study on the relationship between scirpus planiculmis growth and soil in momoge wetland, it is discovered that the relationship between the average plant height and soil salt content is: , relationship between aboveground biomass and soil salt content: ； The critical growth value of the Scirpus planiculmis without or with small outside interference is relatively small; their height, ground biomass, salinity content are 24.4cm, 4.745g and 1.100%, respectively; when there is outside interference in a certain time, the critical value of growth of Scirpus planiculmis is high ,their height, ground biomass, salinity content are 23.2cm, 4.179g and 0.977%, respectively.

Key words: scirpus planiculmis, growth threshold; salinity; momoge wetland

1.Introduction

Xiang hai, momoge, zha long, horqin in the Songnen plain, etc. nature reserve is for the White crane (Grus leucogeranus) spring and autumn seasons on North-South and from the migratory routes of transit, in which momoge wetland nature reserve the maximum residence time, up to 30 ~ 40d; count the most, the population is stable at around 1 000, only about world population by 20% , home of the world's migration to the head, as the Global Environment Facility (GEF) in our selected 5 "White crane global protection project" implementation of the land. Through field trips and white crane waste analyses，the underground plant bulbs of scirpus planiculmis etc are the main food origin of white crane. However, the grow condition of scirpus planiculmis is destroyed. White cranes in the region of the outage and food trends of declining year by year, threatening their survival of..

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2.material and method

2.1. Research district profile

Momo lattice wetland locates in zhen Lai county, eastern bai cheng city ,jilin province, which is 14.4 million hm2, accounting for zhen Lai county town of 26 % area. Its geographic latitude 45°45 '~ 46°10' and east longitude 122°27' ~ 124°04'; Its annual average temperature, average annual rainfall frost-free period relative humidity annual evaporation are 4.4℃, 412mm,135d , 59%, 1553mm ,respectively, which is temperate continental climate.

2.2. Test method and design

Choose white crane feeding and periphery vegetation community distribution obvious grass as the research sample ruffle meadow, which is from the shore, water depth began around 25cm according to the decline trend of scirpus planiculmis , around to randomly selected representative 1-m x 1-m .Record the height,density,grow status etc(randomly selected 5 strains for average),scissor 4~6 scirpus planiculmis , after survey about 10cm deep soil in this location. (scirpus planiculmis roots mainly distributed in about 10cm).

2.3. Data acquisition

The determination of soil salinity: get 5 g dry soil sample and 25 g water in the tube, using oscillator concussion 20min, after 24h measure conductance values with dry mercury electrode. According to the conductivity temperature correcti onvalues ,calculate the salt content (percentage).

Growth indices of scirpus planiculmis: plant height with tape measure, density with mesh method , Take the scirpus planiculmis in 80 ℃ to get the dry average weight.Determination of soil water content: method of drying and weighing.

3. Results and analysis

3. 1Survey to community types and evolution

Types of sequence evolution is Echinochloa and Phragmites communis-- scirpus planiculmis and Suaeda glauca connected to moisture conditions.By the transition of scirpus planiculmis, it is distributed in shallow water area and shore mudflats. Scirpus planiculmis may be disappeared with decline of moisture and salt optimization.

3. *2Relation of soil salinity and scirpus planiculmis growth indices*

Determine dry weight as indices with the average height and unit area.①Through the scatterplot chart analysis, fit three times equation and composite curve with average height, dry weight and soil salinity, and show with negative correlation($P<0.01$), judgement coefficients are 0.620, 0.720. The model is reliable through F test.

Return of the cubic equation models： $Y = b_0 + b_1 x + b_2 x^2 + b_3 x^3$ ； Growth curve model：

$Y = e^{(a_0 + a_1 x)}$ （abscissa: average plant height; ordinate: biomass and soil salinity of raw numbers Fig.1, Fig.2; regression equation table 1）