The Study on Living-Suitable Index and Spatial Distribution of Grasshopper

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Key words : grassland ,Living-suitable Index ,grasshopper ,ecological factors ,*Oedaleus asiaticus B .-Bienko*

Introduction In recent years , Grasshoppers did increasingly serious harm to grassland with a speed of above 1 .5 hundred million acre per year , resulting in degradation of large area of grassland and decreased yield of grass . In order to control grasshoppers effectively and forecast the occurrence of Grasshoppers , we must clarify the relationship between their occurrence and ecological environment first .

Material and method According to habitat factors which relates closely to activities of oviposition , hatching and growing-up , we can rate the potential possibility and extent of grasshopper's occurrence as well as various types of habitat environment . Different grassland habitat factors give the plague the role played in the grasshopper's occurrence different weights . The model for Grasshoppers living-suitable index :

$$V = \sum_{i=1}^{n} E_i \cdot W_i$$

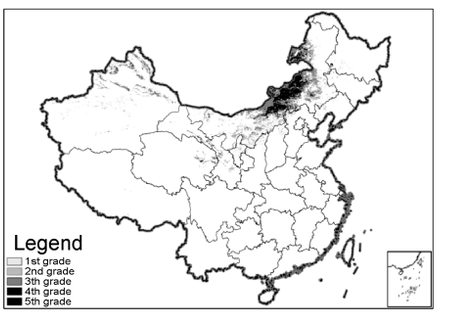
Where , V says living-suitable index ; E_i says the grade value of Section I inhabitation factor ; W_i says the weight value of Section I corresponding to the inhabitation factor .

Analysis of result According to the occurrence regulation of grasshoppers , combine the literature and grasshopper's statistics information in the last decade to determine the grade value and weight , See the Table 2 . The grade criterion : the 1st grade , Grasshopper's occasional distribution ; the 2nd grade , grasshoppers have distribution , but not a disaster ; the 3rd grade , grasshopper's disaster has happened in 5-20% scope ; the 4th grade , grasshopper's disaster has happened in 20-50% scope ; the 5th grade , grasshopper's disaster has happened in50% scope .

Table 1 *Ecological factors grades of* Oedaleus asiaticus B .-Bienko *and weight given .*

Ecological factors /Ei	1	2	3	4	5	Weight
Height /m	100-300 or 3500-4500	300-500 3500-4500	500-700 or 2500-3000	700-900 or 1500-2500	900-1500	0 .15
Slope/ o	20-60	10-20	5-10	2-5	0-2	0 .15
Biomass /kg/ha	100-300 or 3500-6000	300-500 2500-3500	500-700 or 2000-2500	700-900 or 1500-2000	900-1500	0 .2
Soil type	skeletal soil	alluvial brown soil	meadow soil	chestnut soil	Light chestnut soil	0 .2
Grassland type	*Stipa krylovii*	*Stipa grandis*	*Stipa krylovii Artemisia frigida*	*Cleistogenes squarrosa Herbarum variarum*	*Cleistogenes squarrosa*	0 .3

From the calculated results , in the Inner Mongolia region the first grade damaged area is about 7 .14 percent , the second damaged area is about 23 .95 percent , which are concentrated in the Xilinguole League , Wulanchabu League , and other areas . Xinjiang , Qinghai , Gansu , Shanxi and other provinces regions , mainly for the third grade and fourth grade and fifth damaged grade , the second damaged grade is sporadic distribution .



Conclusion Ecological factors and their threshold value's determination directly impact on the accuracy degree of the suitable for grass growing index .