

农学—研究报告

黄淮平原冬小麦霜冻害时空分布特点的研究

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摘要:

黄淮平原是中国小麦的主产区, 而该区又是中国遭受霜冻害最严重的地区之一。霜冻害造成该区小麦产量减少, 影响着中国的粮食安全问题, 通过研究霜冻害在黄淮平原的时空分布特点, 为小麦的种植提供科学的决策依据。选取小麦拔节期后日最低温度及距拔节期天数为指标, 构造霜冻害灾度函数, 利用该函数得到各个地区的冬小麦霜冻害灾度值, 根据灾度值进行霜冻害的等级划分, 计算各级霜冻害的发生频率, 运用GIS得到霜冻害的时空分布特征。研究表明: 在时间上, 各级霜冻害的发生频率随年代呈减少趋势, 轻霜冻害发生最为频繁, 在各个年代频率值都在15%左右, 重霜冻害次之发生频率约为6%左右, 中霜冻害最轻; 在空间上, 该区的霜冻害多发地区以河南省和山东省霜冻害发生最为频繁且受灾较严重, 其发生频率可达30%以上, 最高可达70%。总体上北部地区霜冻害的发生频率高于南部地区。通过对冬小麦霜冻害时空分布特点的分析, 为该区冬小麦霜冻害的防灾减灾以及冬小麦品种的选择提供一定的理论依据。

关键词: 时空分布

Spatial and Temporal Distribution of Winter Wheat Frost Injury in Huanghuai Plain

Abstract:

Huanghuai Plain is the main wheat production area of China, and this area is one of the places where frost happens seriously. Frost makes the wheat yield reduce, impacts on food security issues. Studying the temporal and spatial distribution of frost injury in Huanghuai Plain provided scientific basis for decision for the cultivation of wheat. This paper selected the lowest temperature after the jointing stage and the number of days from jointing stage as the indices in order to construct the frost injury disaster function. Using this function got the frost injury disaster value of various regions of winter wheat. According to the value of the frost disaster classified the grades of frost. Using the value calculated the frequency of frost injury at all levels. Using GIS got the characters of spatial and temporal distribution of frost injury. The results showed that at all levels, frequency of occurrence of frost injury tended to decrease with the years, and the mild frost happened frequently. The frequency of mild frost was about 15% at all years. The frequency of the severe frost was about 6% fewer than the mild frost. The frequency of the moderate frost was the fewest. Henan Province and Shandong Province were the areas where frost occurred frequently and seriously. The frequencies of these areas were more than 30%, and the most were 70%. Overall, the frequency of northern part was more than the south. The analysis of wheat frost injury on temporal and spatial distribution provided a theoretical basis of disaster prevention and reduction of winter wheat and the selection of winter wheat varieties.

Keywords: temporal and spatial distribution

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