

P283

A meteorological factor analysis for high rice production in South Korea

Junhwan Kim*, Wangyu Sang, Pyeong Shin, Hyeounsuk Cho, Myungchul Seo

Crop physiology and production, National Institute of Crop Science, Rural Development Administration, 181, Hyeoksin-ro, Iseo-myeon, Wanju_Gun, Jeollabuk-do 55365, Republic of Korea

Abstract

Rice yield of South Korea in 2015 was the highest of the last 30 years. It is important issue to establish food policy whether the historically highest yield in 2015 can be continued or just one-off event. Therefore, it is necessary to understand whether such a high yield as 2015 will be reoccurred. The aim of this study was to find out what climatic factor affect rice yield and how often these climatic factor could occur. For this study, the yield monitoring data from National Institute of Crop Science, Rural Development Administration and the meteorological data provided by Korea Meteorological Administration are used to identify the weather conditions could cause high yield, and how often these conditions occurred in the past. Our results indicated that such as high yield as 2015 could occur only when the mean sunshine hours of July and the mean sunshine hours from the end of August to early September was more than 5.1 hours and 6 hours, respectively. Mean sunshine hour of July may be related to grain number. The mean sunshine hour from the end of August to early September was presumed to relate to grain filling ratio. The relationship between monthly mean temperature and yield or yield component was not clear in this study. In this study, any cycle of high weather condition was not found. Therefore, the probability of high yield weather condition was expressed by frequency. The frequency of the sunshine hour, could make high yield, were 8/35 (23%) over the past 35 years. And the frequency of two years consecutive sunshine hour condition, which could cause high yield, was 1/35 (2.9%). The frequency of recurrence of sunshine hour making high yield within the next 5 years or 10 years after high yield weather condition were 4/35 (11.4%). After all, the high yield as much as yield of 2015 could not be one-off event. But it was not also consecutive event.

Keywords: rice, high yield, meteorology, probability

Corresponding author*

Junhwan Kim

Address: National Institute of Crop Science, Rural Development Administration, 181, Hyeoksin-ro, Iseo-myeon, Wanju-Gun, Jeollabuk-Do 55365, Republic of Korea

Tel and Fax : +82-63-238-5283 and +82-63-238-5191

E-mail: sfumato@korea.kr