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## Analysis of Agricultural Ecological Characteristics for the Korean Foxtail Millet [*Setaria italica*] in 'Kangwon-do' Area of Korea

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### [Introduction]

Foxtail millet is a traditionally representative minor food crop in Korea. Recently it's demand has been gradually increased as a health supplement food of rice. However, its low productivity and high cost in domestic cultivation and the increase of cheap imports are the major challenges to overcome. This research was conducted to determine the agricultural ecological characteristics of Korean foxtail millet in order to cultivate in high latitudes of the Korean Peninsula.

### [Materials and Methods]

The field experiment was conducted in 'Hwacheon' and 'Inje' provinces in 'Kangwon-do' area of South Korea, which are high latitudes in South Korea, for two years from 2020 to 2021. The 4 Korean foxtail millets included the 2 early and the 2 late maturity cultivars. The 4 planing times were done at the mid-May, the late May, the early June, and the late June to find the limiting dates of heading and harvest. The days required to heading and harvest, and those accumulated temperatures were determined for 2 regions, 4 cultivars and 4 planting times, respectively.

### [Results and Discussion]

When the plantings were delayed from the mid-May to the late June, the heading dates of 2 early maturity cultivars were delayed from the early Aug. to the early Sep. which were 70 to 80 days required to heading from planting. Those of 2 late maturity cultivars were the mid-Aug. to the mid-Sep. with 80 and 100 days, respectively. The limiting date of harvest was the mid-Oct., which was the 50 days to harvest from heading, regardless of regions, cultivars and planting treatments. The accumulated temperatures required to heading from planting was about 1,500°C of the 2 early maturity and 2,000°C of the 2 late maturity cultivars. The accumulated temperatures to harvest from heading was about 900°C in all 4 cultivars. In summary, the limiting total growth days and its accumulated temperatures of Korean foxtail millet was 115 days with 2,400°C for early maturity and 135 days with 2,900°C for late maturity cultivar in 'Kangwon-do' area, which would be satisfied to cultivate the Korean foxtail millet in high latitudes of the Korean Peninsula.

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