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Effects of Sowing Regions (south and north-central) and Periods on Early Growth of Soybeans

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[Introduction]

Soybeans are a major food crop in North Korea, as well as a significant source of protein for the country's people. However, North Korea is actually facing severe food shortages, and increasing soybean productivity is one solution to this problem. Therefore, this study was carried out to determine the sowing critical date (temperature) by differing the sowing periods in two regions of South Korea, and to apply to North Korea in the difference in soybean growth due to latitude differences.

[Material and method]

The sowing critical date was determined using three cultivars ["Saeol"(early maturing cultivar), "Seonyou-2"(mid maturing cultivar), and "Daewon"(mid-late maturing cultivar)] in the southern region (Jinju) and the north-central regions (Yeoncheon). Soybeans were sown in two regions based on the temperature of the sowing period. Seeds were sown on March 24 (9°C), April 6 (11°C), 15 (13°C), 28 (15°C), May 16, (20°C), and June 10 (25°C) in Jinju, and on April 10, 20, 30, May 10, June 5, and June 10 in Yeoncheon, respectively. Soybean sowing was performed with a 15 cm plant spacing and a 80 cm row spacing.

[Results and Discussion]

The emergence rate of Jinju and Yeoncheon tended to increase as the sowing period for all soybean cultivars became later. The sum of temperatures until days from sowing to emergence in the two regions differed by 56-63°C, except for the standard sowing date (June 10), which is a high temperature period, and days of emergence have also been different by 3-4 days between Jinju and Yeoncheon regions. Days from sowing to emergence tended to decrease as the sowing period became later and the temperatures increased in the two regions. Days to flowering ranged from 63 to 123 days for cultivars after sowing in Jinju and 100 to 127 days in Yeoncheon. A similar pattern could also be observed in the days required to reach the growth and development stage. Relative comparison between the sum of temperatures and growth and development stages in both Jinju and Yeoncheon regions revealed a consistent difference by cultivars such as 19~21 days for V3, 22~23 days for V6, 16~23 days for V9, and 24-42 days for R2 stages in growth and development stages, indicating that this can be applicable to high-latitude regions.

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