

PA-07

Effect of Day length and Air Temperature on the Agronomic Characteristics of Sesame Varieties in the Central Northern Area

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[Introduction]

Optimum sowing time in sesame cultivation at the temperate regions affects seed yield potential strongly. Generally, sowing date is mainly determined by the combination of the effects of day length and air temperature. With the delay of sowing date, the day length decreases and the duration of high temperature(accumulated temperature) becomes short, although the air temperature during the early growth stage is higher. As sowing date delayed, days to the first flowering is short in Korea maybe due to the effects of short day length and high air temperature. This experiment was conducted to find out the exact effects of day length and air temperature to the sesame flowering in the in the central northern area of Korea.

[Materials and Methods]

The experiment was conducted at two different regions, Suwon and Yeoncheon in 2019 using 7 sesame varieties(Ansan, Sungboon, Poongsung, Yangbaek, DT45, 90ilkkae, Arum) which have different agronomic characteristics. We sowed sesame varieties on May 15th and surveyed general growth characteristics and yield components such as plant height, flowering date, capsule number per palnt and seed weight etc.

[Results and Discussion]

According to the results, two experiment places, Suwon and Yeonchen showed different meteorological data. Latitude gap was 1°(Suwon 37°, Yeoncheon 38°), average air temperature gap was 1.7°C(Suwon 12.8°C, Yeoncheon 11.1°C) and sunshine duration gap was 93hrs(Suwon 2,293hr, Yeoncheon 2,200hr). Therefore, different agronomic characteristics results between two regions were reasonably comparative in view of day length and air temperature response. In comparison of flowering date, Suwon showed 3 ~ 5 days earlier than Yoenchen. Of the sesame varieties, 90ilkkae showed earliest flowering date as June 24th and Arum showed latest flowering date as July 2nd. In the comparison of agronomic characteristics among sesame varieties and regions, Suwon showed favorable than Yoenchen. Average plant height of sesame at Suwon and Yeoncheon showed 160cm, 156cm respectively. In comparison of capsule number per plant, it showed 122 at Suwon, 69 at Yeoncheon each other. Conclusively day length is dominant factor than air temperature to affect sesame flowering. And Yangbaek, DT45 varieties showed to be sensitive to the temperature among other sesame varieties. Otherwise, Sungboon, Poongsung and Arum showed to be sensitive to the day length for determining flowering period of sesame varieties.

[Acknowledgement]

This study was supported by a grant from the analysis of physio-ecological response of sesame depending on the temperature and day length (Project No: PJ014278012019), Rural Development Administration. Korea

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