

PA-039

Analysis of the Effect of Temperature and Daylength on flowering and Growth Characteristics of Sesame

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[Introduction]

Sesame(*Sesamum indicum* L.) is typically temperature and day length sensitive plant indicating that its flowering is promoting under high temperature and short day length condition. Sesame with indeterminate inflorescence habit accelerates flowering and maturity period under 10~12 hours of short day length condition. Generally, the effect of seeding date is mainly the combination of the effects of day length and air temperature. With the delay of seeding date, the day length during growth decreases and the duration of high temperature becomes short, although the air temperature during the early growth stage becomes higher. Here, we examined the effects of temperature and daylength on the flowering process and the related agronomic characteristics of sesame.

[Materials and Methods]

The experiment was conducted at the temperature and daylength controlled greenhouse. Each different combination treatment, such as 22°C, 24°C, 26°C under 12hours daylength and 13hours, 14hours, 15hours under 28°C temperature were applied to the seven sesame varieties of Ansan, Sungboon, Poongsung, DT45, 90days, Yangbaek and Arum. Light irradiation time was from 7 am to 6 pm and sesame seed sowed to the Wagner pot with 1/50,000a diameter. General sesame cultivation methods were applied and surveyed agronomic characters and yield related characters.

[Results and Discussion]

According to the experiment result, day length was much more influenced factor to sesame flowering than temperature. The degree of day length effectiveness was different depending on the sesame varieties. Days from sowing to flowering of sesame was negative correlation to the yield related characteristics such as stem length, capsule number per plant, 1000 seed weight and seed weight per 10a. In case days from sowing to flowering was longer and flowering date was later, reproductive growth period was shorter during maturity period. In the analysis of the effect of temperature and day length to seed yield production, temperature was much more effective factor than day length. Otherwise, day length was more effective than temperature under low temperature such as 22°C. All varieties except Ansan were showed temperature favor types. Poongsung and Sungboon were early sowing favorable types under low temperature and short day length. DT45, Poongsung, 90days, Ansan and Sungboon were late sowing favorable types with high temperature and long day length. Yangbaek and Arum were favorable in both case of early and late sowing.

[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: PJ014278012020), Rural Development Administration. Korea.

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