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Study on the yield and delayed stem senescence of soybean varieties in late sowing cultivation

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Abstract

Delayed stem senescence of soybean is a phenomenon of retarded leaf and stem yellowing, where plants maintain a high stem water content and remain chlorophyll in leaf and stem at maturity stage. This phenomenon was one of the most important physiological disease in Japanese soybean cultivation. The occurrence of delayed stem senescence was affected by sowing time. And the most of Japanese field, soybean seeds were sowed in June. June is the rainy season in Japan, and the soil water content of field become higher in this season. In this study, the effects of late sowing (July sowing) on the yield and the occurrence of delayed stem senescence in soybean cultivars Enrei, Tachinagaha and Ayakogane were examined from 2013 to 2015, in the experimental farm at Nihon University (Fujisawa-city, Kanagawa, Japan). The seeds of all cultivars were sowed in June (June-normal density plot) or July (July-normal density plot, July-high density plot and July-super high density plot) in field experiment. The pot experiments were carried out in 2014. In all cultivars, the yield of July-high density plot and July-super high density were higher than that of June normal density plot. And the yield of June-normal density plot was the same as that of July-normal density plot. In all cultivars, the occurrence of delayed stem senescence was increased by seeding in June sowing. And in July sowing plots, no significance difference in the occurrence of delayed stem senescence was observed among density plots. One of reason about the increasing the occurrence of delayed stem senescence in June-normal plot was the increasing of the damaged seeds by bean bugs. Add one of reason about the decreasing of the occurrence of delayed stem senescence of July plots was the decreasing of the amount of cytokinin supplied from root to top and water stress after the flowering time was improved compared with the June plot. In conclusion, the yield of Enrei, Tachinagaha and Ayakogane were not changed by changing the sowing time from June to July. In all cultivars, the occurrence of delayed stem senescence were decreasing by seeding in July.

Key words : cytokinin in xylem exudate, delayed stem senescence, late sowing, soybean(*Glycine max*(L.) Merr.).

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