

Effect of Mix Cropping of Determinate and Indeterminate Lines on Sink-Source Balance in Soybean Grown in Kawatabi Field Center

著者	SAITO Daiki, OGAWA Momoko, KAWAMURA Issei, SADAIKE Ayumi, HOMMA Koki, NAKAJIMA Takayuki, ITO Toyooki, SUYAMA Yoshihisa
journal or publication title	Journal of Integrated Field Science
volume	15
page range	85-85
year	2018-10
URL	http://hdl.handle.net/10097/00124026

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Daiki SAITO¹, Momoko OGAWA¹, Issei KAWAMURA¹, Ayumi SADAIKE¹, Koki HOMMA^{1,2}, Takayuki NAKAJIMA¹, Toyoaki ITO^{1,2} and Yoshihisa SUYAMA^{1,2}

¹Graduate School of Agricultural Science, Tohoku University, Japan

²Applied Biodiversity Center, Graduate School of Agricultural Science, Tohoku University

Stem growth habit of soybeans (*Glycine max* (L.) Merr.) are generally classified into determinate type (DET) and indeterminate type (IND). DET is commonly planted in Japan, while IND is planted in Midwest U.S. and contributes to attain higher yield. IND has longer vegetative growth period than DET, generally producing larger amount of leaves which associate higher productivity. They also associate stronger stability to compensate damages by insects and weather.

The introduction of IND to soybean cultivation in Japan has been tested in many studies, but they often showed no yield advantage because of lodging or excess foliage (e.g. Chonan et al., 2016). To regulate such disadvantages the authors tried mix cropping of DET and IND in Kawatabi Field Center since 2016. Sadaike et al. (2017) reported that the mix cropping showed a positive effect in terms of land equivalent ratio, but the effect on yield was negligible. To improve the productivity, analysis for effect of mix cropping on crop growth and yield formation would be necessary.

This study focussed on sink-source balance in soybean to evaluate the balance of yield formation and crop growth. For the purpose, grain weight was measured as sink capacity and leaf area was measured as source capacity. The balance was evaluated at each node, and the effect of mix cropping on the balance was analyzed.

DET and IND derived from 'Kariko 1222' which are 'Ohsuzu'×'Athrow' recombinant hetero lines were used. They planted each in sole cropping, and both in mix cropping (replacement arrangement) in a randomized block design with three replications. The dates of sowing were 13 June 2017. Measurements of leaf area were made at full bloom period (R2) and beginning seed period (R5). Harvested at full maturity period (R8) and measured grain weight. Some of results will be shown in the presentation.

References

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