

Evaluation of growth parameters and yield characteristics of three soybean cultivars in upland and drained paddy field

Young-Son Cho*, Ho-Ki Park, Wook-Han Kim, Suk-Dong Kim, Jong-Ho Seo, Young-Guk Kim, Jin-Chul Shin

National Institute of Crop Science, RDA, Suwon-Si, Korea

Objectives

- To estimate grain yield as possible as earlier before harvesting of soybean by use of growth characteristics in upland and paddy field
- To find out relationships between growth parameters and soybean yield

Materials and Methods

1. **Sites** : This experiment was conducted at two NICS(National Institute of Crop Science) experimental fields, upland and drained paddy field
2. **Soil texture and nutrients**: - The soils were loam in both sites and the compositions were 44.4% : 44.4% for Sand; 24.4% : 22.7% for Silt; 31.2% : 32.9% for Clay in upland and drained paddy field, respectively.
 - Soil nutrients of surface soil (0-20cm) : Organic matter was 2.7 : 2.4% in upland and drained paddy field, respectively. The pH 6.4 : 6.1; EC 1.2 : 1.2 ($\mu\text{S}/\text{m}$); P_2O_5 121 :58 (mg/kg); SiO_2 84 : 74 (mg/kg), N 0.15 : 0.12%; CEC 12.7 : 13.4 in upland and drained paddy field, respectively.
3. **Experimental design and soybean cultivars**: The experiment was a randomized block design with two different cropping systems, and three soybean cultivars with 3 replicates. Soybean cultivars were Taegwangkong, Daewonkong, and Hwanggumkong and they are sized midium-large (5-7mm) and mostly using for soy pasta or soy sauce.

Results and Discussion

1. Grain yield was usually higher in upland cultivated soybeans than in the drained paddy field cultivation
2. In both experimental sites, Leaf Area Index of soybean was maintained 2.9-3.5 between 8WS and 13WS and they mostly positively related with shoot dry weight
3. The highest positive correlation coefficient for grain yield was grain no./plant and this was closely related with leaf area index

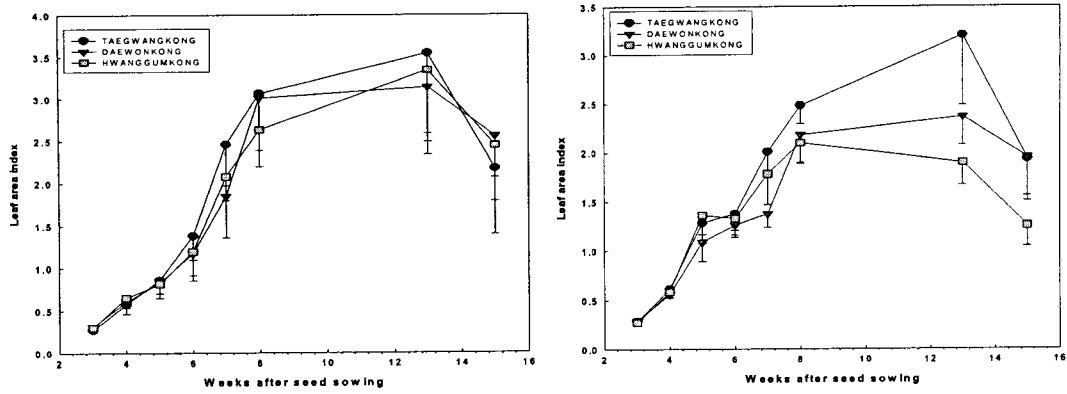


Fig. Changes of leaf area index of three soybean cultivars in paddy field (left) and upland (right).

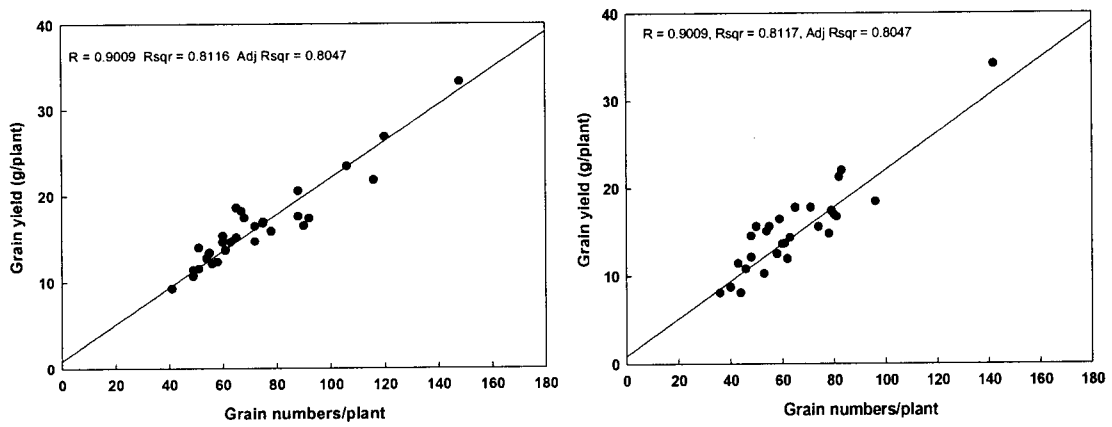


Fig. Correlation coefficients between grain yield and grain no./plant in paddy field (left) and upland (right)