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## An Kenaf (*Hibiscus cannabinus* L.) Pedigree Improved Seed and Biomass Yield

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### [Introduction]

Kenaf (*Hibiscus cannabinus* L.) is a fiber crop belonging to the family of Malvaceae and native to India and Africa. This crop has been called 21 century's crop due to the high productivity. To successfully cultivate kenaf in Korea, the development of its new varieties producing high seed and biomass yield is essential. In this paper, we describe characteristics of a kenaf pedigree in comparison to the Control varieties, Jangdae and Hongma.

### [Materials and Methods]

The parental two materials used in this study are Jangdae and Hongma 300 varieties. F1 lines were established in 2017 using Jangdae as female and Hongma as male resource. In 2018, backcross was implemented with Jangdae used as recurrent parent and harvested BC1F1 seeds. The seeds of previous year were planted, harvested BC1F2 seeds, and since then assigned numbers for 22 lines in 2019. 20 seedlings per each pedigree of BC1F2 generation were grown to maturity in an upland field in 2020. The two-generation shortening of breeding was carried out from 2020 Step. to 2021 April. All lines were used to record data on days to 1st flowering, stem diameter and branch number, and so forth. The chlorophyll fluorescence analysis was done using FlourPen. The record data was average of 10 repetitions.

### [Results and Discussions]

The traits of interest in kenaf are high biomass of aerial part, and ample seed yield in Korea. So, we conducted this project to select an elite mutant with these traits of interest using backcross. The several agronomic performances of a pedigree (JBK4-363) were investigated at F5 generation in comparison with the two Controls (Jangdae, Hongma). Significant differences were observed between the two Controls and JBK4-363. The number of flowering days for JBK4-363 was August 17 showing big difference in comparison with Jangdae (7.11) and Hongma (9.30). The JBK4-363 with green in stem has a some difference from light red of Hongma. As to stem diameter, JBK4-363 showed 20cm being higher than Jangdae of 15cm. This trait is the high correlation with biomass productivity. The leaf length, width, green degree, and flower size were founded to be different among genotypes. For OJIP analysis, Fm/Fv score of JBK4-363, being a parameter presenting the photo system II activity degree, is 0.65 being the same statistical value among genotypes. On the basis of these results, we concluded that JBK4-13 has the potential to be an important genetic resource with the ability to satisfy high biomass and seed productivity in Korea.

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