

## DOA Khon Kaen 4 (KK4): A new sugarcane cultivar with high fiber (bagasse) productivity

Production

Implementation

Item: Sugarcane

Biomass utilization

Procurement

Implementation

Outline

A new sugarcane cultivar with high fiber production and the same amount of sugar production as conventional cultivars was developed in Thailand. The use of this cultivar is expected to increase the production of bioenergy and other products using fiber.

### Background/effect/note

In the sugarcane industry, electricity generation using fiber is increasing along with sugar production. To expand the utilization of fiber, DOA Khon Kaen 4 (KK4) was developed in Thailand using an interspecific crossing between sugarcane and its wild species (*Saccharum spontaneum*) (registered as TPJ04-768, new cultivar number 0317/2558, Department of Agriculture, Thailand). The sugar yield of this cultivar was comparable to that of the conventional cultivar KK3 although the sugar content was slightly lower. Moreover, the production of fiber (bagasse\*) in this cultivar is approximately 1.5 times higher than that in KK3 in Northeast Thailand (Figs. 1 and 2). Thus, KK4 is a suitable raw material for biofuel and other biomass applications. KK4 is more suitable than KK3 for multiple ratoon cultivation based on its decreased yield reductions in ratoon cropping. Machine harvesting may be required due to the thin and large number of stalks of the cultivar (Table 1). Breeding of similar cultivars can be applied to other Asian countries to promote fiber utilization in the sugar industry.

\* Bagasse is the fibrous material that remains after crushing sugarcane stalks to extract the juice. This material is used as a raw material for electricity production.

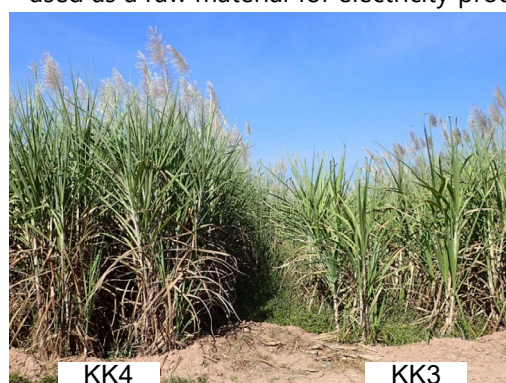


Fig. 1. The growth at second ratooning in Kosum Phisai of Northeast Thailand (December 2014) , Left: KK4, Right: KK3

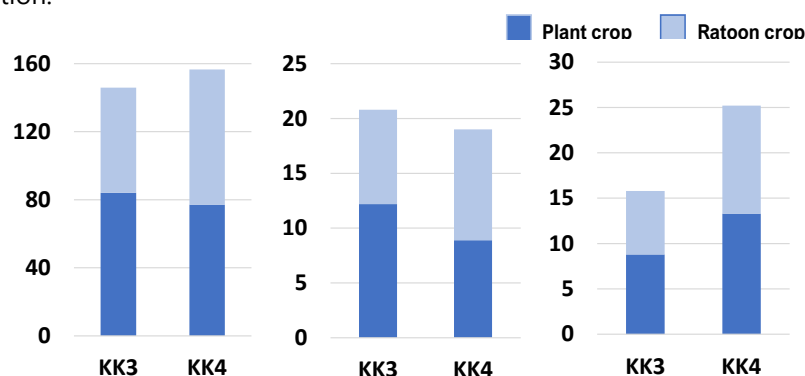


Fig. 2. Yield of KK4 at plant and ratoon crop (t/ha) in Khon Kaen of Northeast Thailand

Left: Cane yield, Middle: Sugar yield, Right: Fiber yield

Table 1. Characteristics of the yield components of KK4 (at harvesting of ratoon crop of Fig. 2)

Variety	Stalk no. (no. /ha)	Diameter (cm)	CCS (%)	Fiber (%)
KK3	42468	2.84	14.0	11.3
KK4	51282	2.22	12.7	15.0



Technical details:

[https://www.jircas.go.jp/en/publication/research\\_results/2015\\_b10](https://www.jircas.go.jp/en/publication/research_results/2015_b10)

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