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COMPARISON OF COOKING TIME OF COMMERCIAL BEAN VARIETIES AND NEW BREEDING LINES DEVELOPED IN EASTERN AFRICA

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INTRODUCTION

Long cooking time is a major constraint to domestic bean consumers and the processing industry in eastern Africa because it requires more energy, time and increases the cost of production of processed dry bean products, and reduces their competitiveness with other grain legumes. Cooking time of dry beans can vary from 1½ to 8 hours depending on variety (Miles and Sonde, 2004; Kimani et al, 2005). However, little has been done to develop fast cooking bean varieties in eastern Africa (Kimani et al, 2005). Breeding fast cooking bean is now critical due to strong preference for fast cooking and processed foods especially in urban communities. Cooking time of commercial bean varieties grown in eastern Africa under controlled or comparable conditions is not known. Such information will provide a baseline against which improvement in cooking time can be measured. Our objective was to compare the cooking time of commercial varieties and new advanced bean lines selected for fast cooking at the University of Nairobi.

MATERIALS AND METHODS

Cooking time of 34 bean genotypes were determined using a Mattson cooker in the Food Science laboratory, Upper Kabete campus, University of Nairobi. The genotypes included 10 popular commercial varieties, seven recently released biofortified varieties and 17 advanced lines of diverse market classes selected for fast cooking (Table 1). The study genotypes represented the Andean and Mesoamerican gene pools and the major market classes grown in east, central and southern Africa. Beans were for soaked for 16 hours before cooking. Each trial was replicated three times. Data was analysed using Genstat software (v15).

RESULTS AND DISCUSSION

Results showed highly significant ($P < 0.001$) differences in cooking time among the test genotypes (Table 1). Cooking time varied from 26 to 106 minutes for all genotypes. This indicated adequate genetic variation for cooking time among these genotypes. Cooking time of commercial varieties varied from 47.3 minutes (Mex 142) to 105.9 minutes (KAT 56). Among the red mottled market class, three biofortified varieties and three advanced lines cooked significantly faster (23 to 40 minutes) than the corresponding commercial check varieties, Rosecoco and KAT B69. Three red kidney lines cooked significantly faster (71 to 78 minutes) than Canadian Wonder (GLP 24) and KAT56. A similar trend was observed for small red, navy, pinto and specked sugar market classes. Among the new biofortified bean varieties, cooking time varied from 26 minutes (*Kenya Afya*, *Kenya Cheupe* and *Kenya Majano*) to 45 minutes (*Kenya Maua*). Cooking time of ten advanced canning bean lines varied from 26 minutes (KCB 13-10) to 36 minutes (KCB 13-01). Industry reference canning variety, Mex 142, cooked in 47.3 minutes. This indicates that the new canning bean varieties cooked much faster than any of the