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## Canning quality of new advanced canning bean lines developed in Kenya

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### ABSTRACT

Laboratory testing of canning quality of new canning bean varieties destined for canning industry is of utmost importance and is widely accepted in bean breeding. The objective of this study was to evaluate canning quality of advanced canning bean lines previously selected for drought tolerance, resistance to diseases and other agronomic traits. Twenty nine advanced lines from two distinct bean types: small seeded types (Mesoamerican gene pool) large seeded types (Andean gene pool) and the industry standard check variety Mex142 were evaluated. Beans that were soaked, blanched, canned in brine and stored for three weeks, were evaluated for canning quality attributes including: hydration coefficient (HC), washed drained weight (WDWT), percentage washed drained weight (PWDWT). Physical properties (size, shape, uniformity) and visual appearance properties (splits, clumping and brine clarity) were determined subjectively using seven point scale. Among small seeded lines, differences were significant ( $p < 0.05$ ) for HC which was highest (2.0) in BCB11-108, BCB11-184, BCB11-98 and lowest in BCB11-245(1.4) while Mex142 achieved 1.7. WDWT and PWDWT were the highest in BCB11-10 (294.4 g and 71.1% respectively) and were the lowest in BCB11-512 (265.3 g and 61% respectively). Differences were significant ( $p < 0.05$ ) for all physical and visual appearance properties. Size and shape ranged from moderately small (1.7) and round (6.0) to slightly small (3.0) and slightly elongated (2.7) while uniformity was the lowest in Mex142 (3.7). BCB11-10 showed highest splits (2.3) and BCB11-245 was the most intact line (6.3) while Mex142 had 3.3 score. Clumps were highest in BCB11-515 (2.7). Brine clarity varied from very clear to moderately cloudy across small seeded advanced lines. Among large seeded lines, hydration coefficient ranged from 1.6 to 1.4 compared to Mex142 (1.7). WDWT was highest in BCB11-176 (294.1 g) and BCB11-327 (291.9 g), and the lowest was in BCB11-303(274.3 g) while Mex142 achieved 282.8 g. Differences were not significant ( $p < 0.05$ ) among large seeded for PWDWT. Differences were significant ( $p < 0.05$ ) for all physical and visual appearance properties. Size and shape ranged from slightly large (4.7) and round (5.0) to moderately large (6.3) and elongated (2.0). Uniformity was the lowest in BCB11-159 (2.7) and Mex142 (3.7). Bean splits were the highest in BCB11-467(2.0) and BCB11-130 showed the most intact bean (5.7). Clumps were minimal among large seeded beans and produced cloudy brine. The results of this work indicate that new canning bean varieties of different market classes suitable for canning industry can be selected from these advanced lines.

**Key words:** Small seeded beans, large seeded bean, physical properties