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## Abstract

Sorghum [*Sorghum bicolor* (L.) Moench] is an important fodder; however, its use is limited by the presence of dhurrin that breaks down to yield hydrocyanic acid (HCN), which is toxic to livestock. Twenty sorghum cultivars were evaluated in two sites in the year 2019 and three sites in the year 2020 (Egerton, Rongai, and Marigat representing cool, warm, and hot regions in Kenya) in randomized complete block design with three replications and plants sampled at booting and dough growth stages to measure hydrocyanic acid potential (HCN-p) of sorghum. Analysis of variance revealed significant effects of both two-way and higher-order interactions of cultivar (G), location (L), and stage (S) by season (Y), that is,  $G \times L \times S$ ,  $G \times L \times Y$ ,  $G \times Y$ ,  $G \times S$ ,  $L \times S$ , and  $L \times Y$ . Main factors (cultivar, location, and stage) also have a significant effect on HCN-p of sorghum. IESV9110 had the highest HCN-p (146.09 mg kg), while EST 37 had the lowest HCN-p (83.97 mg kg<sup>-1</sup>) across all locations. There was a progressive increase in HCN-p from a cooler region to a warmer and a hotter region, respectively. HCN-p on average was 47.8% less at Egerton University than at Marigat, 35.4% higher in Marigat compared to Rongai, and 14.41% less in Rongai compared to Egerton. Sorghum sampled at booting stage had averagely higher HCN-p (133.94 mg kg<sup>-1</sup>) compared to dough stage (91.31 mg kg<sup>-1</sup>). The average air temperatures during the growing seasons were 24–27.3°C, 21.8–22.9°C, and 16.5–19.5°C for Marigat, Rongai, and Egerton, respectively. Growing temperature needs consideration when recommending fodder sorghum with low HCN-p.