# Bulb yield stability study of onion lines over locations and seasons in Ghana and Mali

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**Abstract**

Onion is one of the most economically and nutritionally important crops in West Africa. However, few high-yielding varieties are available to farmers. Onion lines from the World Vegetable Center's Allium program were evaluated during the cool and dry season from September to March for three years to identify adapted onion lines suitable for sustainable intensification of production systems in the Africa RISING project intervention zones of Northern Ghana and South Mali. The trials were implemented in the Upper East and Northern Regions of Ghana and in two districts in the Sudan savanna zones of Mali (Bougouni and Koutiala). Nine onion lines, including check varieties, were assessed for yield stability. The trials were carried out in 'technology parks under the joint management of farmers and researchers. Onion bulb weight was recorded for each plot after harvest. Separate analysis of variances were performed for each location and season in a complete randomized design. Analysis of variance of combined locations, seasons and lines was made to determine the most stable varieties using the line-superiority measure (Lin and Binns, 1988) and ecovalence stability coefficients (Wricke, 1962). Results indicated that lines AVON1310 and AVON1325 were most stable for yield performance over locations and seasons. From the genotype main effects and genotype-by-environment interaction (GGE) biplot, the best performing lines were AVON1310 (33.32 t/ha), AVON1308 (28.81 t/ha) and AVON1325 (31.68 t/ha). These lines are potential candidates for sustainable intensification in Ghana and Mali.