



# Yield, Nutrient Content and Release of Improved Amaranth Varieties in Northern Tanzania

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## INTRODUCTION

Amaranth (*Amaranthus* spp.) is one of the most commonly produced and consumed traditional vegetables on the Africa continent. It is a traditional leafy vegetable in northeast Tanzania, listed first in the top five vegetables grown in the region (Keller,2004). It is a nutritious crop with high protein, minerals, and vitamins. Tanzania still lacks improved varieties of amaranth despite the importance of the crop for human health. The objective of the current study was to come up with improved lines and release as commercial varieties.

## RESULTS AND DISCUSSION

Significant differences among entries in all locations were found for yield, plant height, leaf sizes and branch numbers per plant. Three selected lines, UG-AM-9-ES13-2 (*A. dubius*), AH-TL-Sel (*A. hypochondriacus*) and PARIS (A)-Sel (*A. cruentus*) that performed well across locations were released as commercial varieties in Tanzania in 2018 (Table 1) under commercial name called ‘Nguruma’, ‘Poli’ and ‘Akeri’, respectively. ‘Nguruma’ (Fig 1) is a vegetable type while ‘Poli’ (Fig 2) and ‘Akeri’ (Fig 3) are dual type serving as vegetable and grain type varieties. For vegetable, ‘Nguruma’ has high market demand and liked by farmers for continuous harvesting system, which is several times harvest from a single planting operation. ‘Poli’ and ‘Akeri’ are preferred by producers for one go uproot harvesting system as vegetable. For grain production, ‘Poli’ is liked for its golden yellow grain color and ‘Akeri’ for its creamy white color.

Table 1. Fresh vegetable yield, and farmers selection scores (0-4 scale, 0 = very poor and 4 = excellent) of selected three amaranth (*Amaranthus* spp.) genotypes tested at three locations in northern Tanzania, 2016

Entry	Species	Total marketable fresh yield (t/ha)*				Mean female selection (0-4 scale)				Mean male farmers selection (0-4 scale)			Mean all farmers selection (0-4)		
		WorldVeg-ESA	MO	MB	Mean	WorldVeg-ESA	MO	MB	Mean	WorldVeg-ESA	MO	Mean	WorldVeg-ESA	MO	Mean
PARIS (A)-Sel	<i>A. cruentus</i>	17.4	6.9	12.0	12.1	1.9	1.7	1.4	1.7	1.6	1.7	1.6	1.8	1.5	1.7
AH-TL-Sel	<i>A. hypochondriacus</i>	20.9	10.0	8.8	13.2	2.5	1.7	2.1	2.1	2.0	2.1	2.1	2.3	2.1	2.2
UG-AM-9-ES13-2	<i>A. dubius</i>	29.8	21.9	27.2	26.3	3.5	2.9	3.9	3.5	3.3	3.5	3.4	3.4	3.7	3.6
Madiira 1 (Check)	<i>A. cruentus</i>	19.3	5.4	9.3	11.4	3.4	2.1	3.4	3.0	2.6	3.7	3.2	3.2	1.9	3.4
Madiira 2 (Check)	<i>A. cruentus</i>	18.1	5.1	8.6	10.6	2.6	1.3	1.6	1.8	2.1	1.7	1.9	2.5	2.5	2.1
Mean		18.7	8.9	11.3	13.0	2.4	1.7	2.1	2.1	2.2	2.1	2.1	2.3	3.2	2.2
LSD (5%)		6.3	4.3	4.5	-	0.4	0.7	0.6	-	0.5	0.7	-	0.4	2.5	-

\*, MO =Moshi, MB = Mbuguni



Fig 1. Breeder seed increase, ‘Nguruma’, 2019.



Fig 2. Breeder seed increase, ‘Poli’, 2019.



Fig 3. Basic seed increase, ‘Akeri’, 2019.

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