content in addition to high yield performance would be good news for Rwanda which is the highest per capita bean consumption in the world but also for the region. In Rwanda, nutritional security is of public health concern. In that framework, national initiatives that complement dietary diversification and contributing to better life have been promoted and include eating fruits, vegetables in home gardens, one cup per child, one cow per poor family program, Umurenge vision 2020 program, biofortification of beans as staple food crop [10]. The nutritional status of under five year old children has improved with lower percentages of wasted, stunted and underweight children. Stunting which is the indicator of chronic malnutrition and a key nutritional issue in Rwanda has decreased from 44% in 2010 to 38% in 2015. The prevalence of wasting decreased from 5% to 1.7% and underweight decreased from 11% to 8% (Rwanda Demographic and Health Survey [11,12].

Biofortification of beans and other staple foods is a globally accepted strategy to address micronutrient malnutrition in nutritionally vulnerable groups. Despite this global initiative, NISR [13] has reported a low adoption of improved seed by small scale farmers who represent the majority of bean growers which would lead to food insecurity due to the fact that the total productivity for improved bean seeds ranges from 2-5 t ha^{-1} compared to 0.8-1 t ha^{-1} for landraces [13,14].

low and mid altitude maybe attributed to the diferences in rainfall during the cropping seasons.

Environment\Genotype	665SI-4/1	MBC 71	NYIRAMAGORORI	RWIBARURA	RWV 1129	RWV 2350-2B	RWV 2365-2
Akanyirandoli	3,000	3,000	1,800	1,300	2,400	1,600	2,500
Karama	1,600	1,600	800	2,000	1,200	2,000	1,400
Kinigi	3,850	4,367	3,359	2,842	3,750	3,650	3,984
Kitabi	714	1,571	1,571	1,714	2,786	1,357	1,214
Muhanga	2,775	1,890	1,788	1,285	2,040	2,300	1,360
Muhoza	4,634	4,492	3,234	3,567	4,550	4,917	4,292
Ngoma	747	738	606	1,169	748	653	554
Nyagatare	1,170	1,454	667	956	251	1,480	1,130
Rubona	1,683	1,488	1,461	1,317	1,395	1,754	1,602
Rwerere	4,031	4,418	4,375	4,656	4,906	3,500	3,723
Max	4,634	4,492	4,375	4,656	4,906	4,917	4,292
% Over check	-6	-8	-11	-5	0	0	-13
Min	714	738	606	956	251	653	554
% Over check	184	194	141	281	0	160	121
Mean	2420	2502	1966	2080	2403	2321	2176
% Over check	1	4	-18	-13	0	-3	-9
LSD=220	Grand mean 2,225		%CV=16		G^{***}	E^{***}	GxE^{***}

Table 1: Mean yield of 7 bean genotypes evaluated in 10 locations in national performance trial (NPT) of climber during 2017 A and B seasons. G: Genotype; E: Environment; GxE; ***: Signifcant at 0.001.

Iron and zinc accumulation

Mean iron and zinc content in seeds difered signifcantly ($P \leq 0.001$) between the seven climbing bean genotypes and 10 environments (Tables 2 and 3). T ere was large variability within and across environments for both iron and zinc content. For instance mean iron content varied between 54 š ĺŭɔ ᵁΞ

qiꞁeɹeq

Akanyirandoli	51.9	61.0	56.0	67.5	71.7	54.0	59.9
Karama	86.3	72.3	91.7	70.5	58.6	91.2	69.3
Kinigi	62.7	56.6	66.3	70.4	61.4	77.4	63.4
Kitabi	62.0	72.5	66.2	77.7	72.8	74.7	67.4
Muhanga	60.5	74.4	65.5	79.9	79.8	84.2	64.3
Muhoza	62.6	84.1	63.8	84.8	78.3	81[illegible]	

LSD=1.066	Grand mean=32.00			%CV=5.5	G***	E***	GXE***

Table 3:

References

1.