Supplemental Tables S1, S2, S3, and S5

Supplemental Table S1. Annual increases in area, production, and productivity and R^2 values in crops from 2011 to 2020

Crops	Area		Production		Yield	
	Annual increase (million ha)	R^2	Annual increase (million tonne)	R^2	Annual increase (t/ha)	R^2
Teff	0.0422	0.7136	0.259	0.9527	0.0664	0.9797
Maize	0.0363	0.7688	0.4908	0.9649	0.1716	0.9728
Sorghum	0.0016	0.0038	0.1809	0.8396	0.0957	0.9488
Wheat	0.0298	0.8076	0.2694	0.9099	0.1199	0.8369
Faba bean	-0.0043	0.0739	0.0281	0.5275	0.0763	0.9533
Common bean	-0.0017	0.0186	0.0146	0.5168	0.0559	0.7513
Soybean	0.0046	0.8263	0.0119	0.8603	0.0812	0.8053

Supplemental Table S2. New varieties of major cereals and grain legumes released in- and before 2021 through the National Agricultural Research System (NARS) in Ethiopia

Crops	Number of released varieties			Percent from total
	Released in 2021	Released before 2021	Total	
Cereals total	**14**	**487**	**501**	**100.0**
Teff	3	51	54	10.8
Wheat (bread + durum)	4	137	141	28.1
Maize	0	77	77	15.4
Sorghum	2	60	62	12.4
Grain legumes total	**24**	**253**	**277**	**100.0**
Faba beans	1	37	38	13.7
Common beans	5	76	81	29.2
Soybean	2	32	34	12.3

Source: Ethiopian Agriculture Authority (EAA), Plant Variety Release Protection and Seed Quality Control Directorate. Crop Variety Register; Issue No. 24, June 2021

Supplemental Table S3. Ecological adaptation and some agronomic characteristics of cereals and grain legumes

Crop	Altitude (m asl)	Rainfall (mm)	Spacing between		Seed rate (kg/ha)	Fertilizer rate (kg/ha)		Remark
			rows (cm)	plants (cm)		P2O5	N	
Cereals								
Teff	1700-2500	500-1300	20		10-15 or 25-30*	40-60	17-64**	teff is sown by drilling, *10-15 (row) & 25-30 (broadcasting); ** applied in split
Maize	800-2600	500-1200	75	25	20-30	46-70	64-92	
Sorghum	600-1900	500-1000	75	25	10-12 or 15-20	46	23	*10-12 (row) & 15-20 (broadcasting)
Wheat	300-2800	500-2000	20		100-150	46	23-46	wheat is sown by drilling
Legumes								
Faba bean	1200-3000	700-1200	40	10	225	46	18	the practice is to apply 100 kg of DAP
Common bean	1000-1950	500-1200	40	10	100-130	46	18	
Soybean	500-1800	460-1600	40	5	40-90	46	18	

Source: MoA and EAA Crop Variety Register, 2005-2021

Supplemental Table S5. Comparison average and highest yields of major cereals and grain legumes from global and African context

Crops	Yield t/ha			
	World average	Africa average	Highest world yield	Highest African yield
Maize	5.7	2.1	10.5	5.8
Sorghum	1.5	1.0	6.5	4.9
Wheat	3.5	2.5	7.8	6.6
Faba bean	2.1	2.0	4.0	3.6
Common bean	0.8	0.8	4.0	3.9
Soybean	2.8	1.4	4.4	2.9

Source: FAO 2020. The Ethiopian yield detail is indicated in Table 1.