

Table 1. Descriptive statistics of grain yield and related traits of 317 teff genotypes under the intensive growing condition.

Variable	Min		Mean	Max		SD
	Value	Genotype		Value	Genotype	
Days to heading	51	237709-2	60	73	212930-4	3.75
Days to maturity	107	230802-4	121	140	230774-5	6.78
Grain filling period	35	212930-4	60	79	230774-5	8.04
Plant height	94.7	234431-1	126.9	156.6	RIL-2	9.99
Panicle length	21.6	55069-3	32.2	46.2	204535-1	4.11
Peduncle length	20.8	234431-1	26.4	31.1	222122-3	1.98
Panicle weight	0.87	234431-1	1.77	2.6	204535-1	0.21
Grain yield	4.2	55069-3	6.24	8.8	242138-1	0.86
Biomass weight	14.6	234431-1	18.4	23.1	204596-3	1.77
Harvest index	0.25	239373-2	0.34	0.45	242138-1	0.03

SD = standard deviation.

Table 2. Descriptive statistics of grain yield and related traits of 320 teff genotypes under the field growing condition (Combined across locations and years).

Variable	Min		Mean	Max		SD
	Value	Genotype		Value	Genotype	
Days to heading	51	204596-2	60	66	214215-4	2.57
Days to maturity	108	234431-1	126	131	203008-5	3.89
Grain filling period	53	229123-2	65	71	249333-2	3.10
Plant height	73.9	234431-1	99.3	129.7	RIL-260	10.58
Panicle length	19.3	235676-4	28.2	39.2	204535-1	3.08
Peduncle length	16.4	234742-3	24.5	31.0	234778-4	2.40
Panicle weight	0.58	237709-2	1.08	1.84	204535-1	0.19
Grain yield	1.8	219882-4	3.1	4.3	229971-3	0.54
Biomass yield	7.4	244784-3	10.7	13.5	203010-4	1.02
Harvest index	0.23	219882-4	0.29	0.34	236261-4	0.02

SD = Standard deviation.

Table 3. Individual location based genotypic (above diagonal) and phenotypic (below diagonal) correlation coefficients of important traits of 320 teff genotypes under the field growing condition.

(a) Adet (Nitosol area) combined over two years										
	DH	DM	GFP	PH	PL	PDL	PW	GY	BM	HI
DH		0.50**	-0.34*	0.47**	0.46**	-0.21*	0.46**	-0.30*	-0.08 ^{ns}	-0.43*
DM	0.48**		0.64**	0.30*	0.31*	-0.01 ^{ns}	0.31*	0.11 ^{ns}	0.21*	-0.17*
GFP	-0.07 ^{ns}	0.84***		-0.08 ^{ns}	-0.06 ^{ns}	0.18*	-0.06 ^{ns}	0.38*	0.32*	0.20*
PH	0.39*	0.27*	0.07 ^{ns}		1.00***	-0.06 ^{ns}	1.00***	0.21*	0.72***	-0.71***
PL	0.20*	0.15*	0.05 ^{ns}	0.67**		-0.05 ^{ns}	1.00***	0.21*	0.63**	-0.59**
PDL	-0.16*	0.04 ^{ns}	0.14*	0.02 ^{ns}	0.09 ^{ns}		-0.05 ^{ns}	-0.05 ^{ns}	-0.03 ^{ns}	0.01 ^{ns}
PW	0.40*	0.30*	0.10 ^{ns}	0.92***	0.63**	-0.03 ^{ns}		0.20*	0.63**	-0.62**
GY	-0.18*	0.06 ^{ns}	0.18*	0.27*	0.27*	-0.11 ^{ns}	0.30*		0.84***	0.45**
BM	-0.01 ^{ns}	0.11 ^{ns}	0.13*	0.53**	0.39*	-0.07 ^{ns}	0.51**	0.80***		-0.08 ^{ns}
HI	-0.25*	-0.09 ^{ns}	0.05 ^{ns}	-0.38*	-0.17*	-0.04 ^{ns}	-0.32*	0.30*	-0.31*	
(b) Bichena (Vertisol area) combined over two years										
	DH	DM	GFP	PH	PL	PDL	PW	GY	BM	HI
DH		0.89***	-0.45**	0.55**	0.37*	-0.16*	0.37*	-0.25*	-0.10 ^{ns}	-0.40*
DM	0.53**		0.04 ^{ns}	0.98***	0.59**	0.27*	0.93***	0.21*	0.17*	0.12*
GFP	-0.24*	0.70***		0.71***	0.37*	0.85***	0.91***	0.90***	0.50**	0.99***

PH	0.40*	0.42*	0.15*		0.77***	-0.04 ^{ns}	0.82**	0.20*	0.50**	-0.02 ^{ns}
PL	0.28*	0.26*	0.07 ^{ns}	0.74***		-0.55**	0.70***	0.21*	0.47**	0.01 ^{ns}
PDL	-0.16*	0.08 ^{ns}	0.23*	-0.03 ^{ns}	-0.52**		-0.02 ^{ns}	-0.04 ^{ns}	-0.06 ^{ns}	0.10 ^{ns}
PW	0.28*	0.43*	0.26*	0.63**	0.56**	-0.05 ^{ns}		0.54**	0.69***	0.34*
GY	-0.22*	0.08 ^{ns}	0.28*	0.19*	0.20*	-0.03 ^{ns}	0.43*		1.00***	0.98***
BM	-0.08 ^{ns}	0.13*	0.21*	0.35*	0.33*	-0.08 ^{ns}	0.49**	0.80***		0.86***
HI	-0.29*	0.01 ^{ns}	0.25*	-0.04 ^{ns}	-0.01 ^{ns}	0.07 ^{ns}	0.23*	0.83***	0.34*	

*, **, ***, indicates significant correlation coefficients at a p values of 0.05, 0.01, and 0.001 respectively, ns = non-significant at $p < 0.05$. DH = days to heading, DM = days to maturity, GFP = grain filling period, PH = plant height (cm), PL = panicle length (cm), PDL = peduncle length (cm), PW = panicle weight (g), GY = grain yield (g/plant), BM = above ground biomass (g/plant), HI = harvest index.

Table 4. Cluster members of the 317 teff genotypes under the intensive growing condition.

Cluster	Size	Cluster members
I	36	225819-3, 229985-2, 234435-3, 235758-3, 234746-3, 236763-1, 237695-4, 234391-1, 237574-2, 238223-1, 202975-2, 204596-4, 203010-4, 242186-1, 55104-1, 55096-1, 55096-2, 55246-2, Dz-01-3772, 229766-1, 219878-1, 229767-4, 237158-1, 229767-1, 234776-1, 234776-3, 234777-1, 234778-3, 244882-1, 219852-2, 229766-5, 234357-2, 249333-2, 236765-3, 237697-1, 236261-3.
II	89	229101-3, 244792-4, 244792-5, 234430-1, 219852-4, 234430-3, 229985-3, 229971-1, 237143-2, 237143-4, 238684-1, 237707-1, 237143-1, 224102-1, 229759-1, 229759-2, 225926-2, 235659-1, 219850-2, 55189-3, 55151-3, 55144-4, 55150-3, 202385-2, 238219-3, 235362-2, 237695-3, 238224-2, 237577-1, 235676-3, 244885-2, 237578-2, 237691-1, Abola, 237691-3, 237573-1, 237573-2, 237577-3, 244885-1, 212487-5, 212929-2, 212929-4, 206081-1, 212490-5, 212489-1, 204596-3, 212489-2, 202978-1, 204535-1, 203007-2, 55111-6, 55114-3, 55125-1, 55140-1, 55114-4, 55140-2, 235667-5, 235659-3, Dz-01-115, RIL-260, 242140-1, 234774-1, 239375-1, 229767-3, 237703-4, 235675-3, 202931-3, 214215-1, 212930-2, 239373-5, 244882-3, 230774-5, 244793-2, 230802-2, 230772-3, 55017-3, 238606-4, 236364-2, 234742-3, 236364-4, 434734-1, 236261-1, 230774-3, 230774-4, 234761-2, 234701-2, 244773-1, 237575-1, Etsub.
III	17	242200-1, 229101-1, 227786-4, 234462-1, 236766-1, 236756-2, 237788-1, 237574-3, 205151-1, 235659-2, 235671-1, Abishlemne, 236261-4, 229971-3, 229986-4, 244783-3, 242138-1
IV	31	229123-2, 244792-3, 244792-2, 236088-1, 55177-2, 55148-1, 55271-3, 55144-3, 235676-4, 239352-3, 237728-2, 234782-2, 212929-1, 202978-2, 202978-6, 55130-4, 235671-2, 235667-1, RIL-2, 235753-2, 239375-2, 242138-4, 222062-1, 212930-1, 214215-4, 229766-3, 244793-7, 230802-4, 230774-1, 230774-2, 242138-2
V	76	236331-2, 237729-2, 237698-1, 234431-1, 228970-1, 228970-2, 55151-2, 237573-3, 237572-1, 237576-2, 244887-1, 234746-2, 204596-1, 212695-2, 204596-2, 238609-2, 55052-2, 203008-5, 55091-1, 55091-2, 55052-1, 55130-3, 55096-3, 55102-2, 55126-3, 55126-4, 55150-1, 55150-2, 238223-2, 235474-3, 236745-2, 55002-2, 202375-2, 55192-2, 238618-1, 55034-1, 55001-2, 235667-4, 235667-6, 236261-2, 236745-1, IBC-31, IBC-29, IBC-26, IBC-37, IBC-45, 234775-4, 244773-2, 219878-3, 229767-5, 219882-4, 237709-2, 222062-4, 244792-1, 222062-3, 222122-3, 225898-2, 225907-3, 225898-1, 229971-2, 244783-1, 214214-1, 236361-1, 236535-2, 234778-2, 215198-3, 202931-6, 219858-2, 229766-2, 244793-5, 230802-3, 229986-2, 244793-8, 55017-1, 234742-2, 237146-3
VI	52	237143-3, 234462-2, 239762-3, 225819-5, 239098-1, 229759-4, 229097-2, 228668-2, 225825-3, 225819-1, 55148-3, 55144-1, 235368-1, 236761-3, 238224-3, 238221-3, 237691-2, 206081-4, 237214-3, 212487-4, 202975-1, 212695-1, 237690-1, 204535-2, 55125-3, 55130-1, 55140-3, 202390-2, 202378-2, 55194-3, 55251-2, 202377-4, IBC-30, IBC-10, Dz-01-3502, Dz-01-3597, Quncho, 244784-3, 239373-4, 237700-3, 225906-1, 222124-2, 234776-2, 214214-2, 215198-2, 234778-4, 219852-1, 229766-4, 229987-1, 244793-9, 234357-1, 238606-1
VII	16	55225-4, 212930-4, 55069-3, 55002-1, 219850-1, 55192-4, 55002-4, 235667-3, 242149-3, 239373-2, 229767-2, 228668-3, 244784-5, 202931-5, 212489-4, 214215-3