

Supplementary Material

Table S1. Descriptive statistics of all traits evaluated across five crop cycles (Y18-19, Y19-20, Y20-21, Y21-22, Y22-23).

Year	Trait	Min	Max	Median	Mean	H2	sd	q25	q75
Y18-19	gy.b5ir	6.0	9.4	7.6	7.6	0.7	0.5	7.3	8.0
	gy.f5ir	5.7	9.2	7.7	7.7	0.5	0.5	7.3	8.0
	gy.b2ir	4.2	7.1	5.7	5.7	0.6	0.4	5.3	6.0
	gy.beht	2.3	9.2	6.8	6.7	0.6	0.9	6.2	7.4
	gy.blht	2.4	7.6	5.8	5.8	0.3	0.6	5.4	6.2
	gy.drt	2.4	5.2	3.9	3.9	0.7	0.4	3.7	4.2
	sr.ken	1.0	85.0	23.8	27.6	-	18.3	12.5	40.0
	yr.ken	0.0	75.0	4.5	8.0	-	10.5	1.5	10.0
	yr.mex	0.0	30.0	0.0	0.6	-	2.6	0.0	0.0
	yr.ind	0.0	80.0	10.0	16.0	-	17.3	1.0	30.0
	fhb.index	0.9	59.7	10.8	12.1	-	7.0	7.0	15.8
	stb.raudpc	9.5	100.0	51.9	51.6	-	16.6	42.9	62.0
	sb.raudpc	0.0	116.3	41.9	43.8	-	15.2	32.4	53.1
	dh.b5ir	73.0	97.0	85.0	85.0	-	4.3	82.0	88.0
	pm.b5ir	117.0	145.0	131.0	131.2	-	3.5	129.0	134.0
Y19-20	gy.b5ir	4.8	7.3	6.0	6.0	0.6	0.4	5.8	6.3
	gy.f5ir	4.4	8.0	6.6	6.5	0.6	0.5	6.3	6.9
	gy.b2ir	3.6	5.7	4.8	4.8	0.6	0.3	4.5	5.0
	gy.beht	4.4	8.3	6.5	6.5	0.7	0.6	6.1	6.8
	gy.blht	0.5	4.3	3.2	3.1	0.2	0.5	2.8	3.4
	gy.drt	2.0	4.9	3.8	3.7	0.8	0.4	3.5	4.0
	sr.ken	0.7	76.7	16.7	20.6	-	15.6	8.3	28.3
	yr.ken	0.0	48.3	3.7	6.0	-	6.1	2.0	8.7
	yr.mex	0.0	20.0	0.0	2.2	-	3.7	0.0	5.0
	yr.ind	0.0	80.0	5.0	13.2	-	15.8	1.0	20.0
	fhb.index	10.1	89.3	32.6	34.7	-	13.5	24.5	41.6

	stb.raudpc	8.3	100.0	33.9	36.6	-	14.8	27.0	45.5
	sb.raudpc	10.2	119.8	56.0	56.8	-	19.5	41.8	73.4
	dh.b5ir	64.0	91.0	78.0	78.2	-	4.7	76.0	82.0
	pm.b5ir	108.0	134.0	123.0	122.6	-	3.6	121.0	125.0
Y20-21	gy.b5ir	6.0	10.1	8.2	8.3	0.4	0.6	7.9	8.6
	gy.f5ir	4.2	9.5	6.3	6.4	0.4	1.0	5.6	7.1
	gy.b2ir	2.9	6.6	4.9	4.8	0.6	0.5	4.5	5.2
	gy.beht	6.7	10.8	8.7	8.7	0.6	0.6	8.3	9.1
	gy.blht	2.9	5.8	4.4	4.4	0.3	0.5	4.1	4.7
	gy.drt	0.0	3.9	2.1	2.0	0.7	0.7	1.6	2.5
	sr.ken	0.0	90.0	28.3	30.4	-	17.8	16.7	43.3
	yr.ken	0.0	65.0	7.5	9.1	-	8.8	2.5	15.0
	yr.mex	0.0	20.0	5.0	3.4	-	3.9	0.0	5.0
	yr.ind	0.0	100.0	10.0	20.3	-	25.3	0.0	30.0
	fhb.index	8.0	99.0	53.3	53.0	-	15.8	42.8	64.1
	stb.raudpc	17.4	107.1	47.5	50.1	-	14.3	40.0	58.4
	sb.raudpc	0.0	171.9	41.0	44.2	-	16.5	31.3	56.5
	dh.b5ir	73.0	97.0	85.0	84.5	-	3.4	82.0	87.0
	pm.b5ir	120.0	139.0	129.0	128.7	-	3.5	127.0	131.0
Y21-22	gy.b5ir	5.2	9.3	7.6	7.5	0.6	0.6	7.1	8.0
	gy.f5ir	5.6	9.3	7.7	7.7	0.6	0.5	7.3	8.0
	gy.b2ir	3.6	6.7	5.0	5.0	0.3	0.5	4.7	5.3
	gy.beht	4.5	8.7	6.9	6.8	0.6	0.6	6.5	7.3
	gy.blht	3.7	7.3	5.8	5.8	0.3	0.5	5.5	6.1
	gy.drt	1.9	5.7	3.9	4.0	0.6	0.6	3.6	4.5
	sr.ken	0.3	70.0	26.7	27.2	-	12.5	18.3	35.0
	yr.ken	0.0	43.3	8.3	9.4	-	7.6	3.3	13.3
	yr.mex	0.0	20.0	0.0	1.2	-	2.1	0.0	1.0
	yr.ind	0.0	90.0	30.0	31.3	-	18.7	20.0	40.0
	fhb.index	16.3	93.1	58.2	58.0	-	12.8	49.5	67.3
	stb.raudpc	3.5	59.5	35.0	35.3	-	9.5	31.5	42.0
	sb.raudpc	19.4	111.0	44.8	47.2	-	15.6	36.9	58.5

	dh.b5ir	69.0	93.0	79.0	78.8	-	4.0	75.0	82.0
	pm.b5ir	116.0	140.0	128.0	128.3	-	3.8	126.3	131.0
Y22-23	gy.b5ir	6.2	9.9	8.1	8.1	0.4	0.5	7.8	8.4
	gy.f5ir	6.5	9.6	7.9	7.9	0.6	0.5	7.6	8.3
	gy.b2ir	4.3	7.3	5.8	5.8	0.5	0.4	5.6	6.0
	gy.beht	6.1	9.5	7.9	7.9	0.7	0.5	7.6	8.2
	gy.blht	5.5	8.9	7.2	7.1	0.6	0.6	6.8	7.5
	gy.drt	3.2	4.8	4.0	4.0	0.5	0.3	3.8	4.2
	sr.ken	0.0	70.0	25.0	26.6	-	12.9	17.5	35.0
	yr.ken	0.0	55.0	7.5	9.8	-	9.3	2.5	15.0
	yr.mex	0.0	20.0	0.0	0.4	-	1.8	0.0	0.0
	yr.ind	0.0	90.0	30.0	31.9	-	22.2	10.0	50.0
	fhb.index	13.2	92.3	50.6	52.1	-	12.8	42.7	61.4
	stb.raudpc	17.0	140.1	57.4	60.9	-	22.5	43.3	76.6
	sb.raudpc	18.7	105.3	70.7	67.6	-	17.9	54.5	80.5
	dh.b5ir	76.0	95.0	84.0	84.4	-	2.8	83.0	86.0
	pm.b5ir	124.0	138.0	131.0	130.6	-	2.7	128.0	133.0

Traits: gy.b5ir: grain yield, bed planting, five irrigations; gy.f5ir: grain yield, flat planting, five irrigations; gy.b2ir: grain yield, bed planting, 2 irrigations; gy.beht: grain yield, bed planting, early heat stress; gy.blht: grain yield, bed planting, late heat stress; gy.drt: grain yield, drought; sr.ken: stem rust phenotyped in Kenya; yr.ken: yellow rust phenotyped in Kenya; yr.mex: yellow rust phenotyped in Mexico; yr.ind: yellow rust phenotyped in Ludhiana, India; fhb.index: fusarium head blight, stb.raudpc: septoria tritici blotch; sb.raudpc: spot blotch; dh.b5ir: day to heading, bed planting, five irrigations; pm.b5ir: days to maturity, bed planting, five irrigations.