



**Figure S1.** Percentage of the sum of squares (SS) explained by the factors included in the ANOVA model for agronomic and quality traits.

**Table S1.** Mean data (+ standard error) of agronomic performance, vegetation indexes and protein quality of two chickpea genotypes (G1, Pascia; G2, Sultano) grown under rainfed (-I) and with supplementary irrigation (+I) and two N rates (-N, +N) at Troia (S1) and Pignola (S2).

E	W	G	N	GY	AWP	WUE	HI	Pods	GW	GN	PH	Nupt	NDVI	OSAVI		LAI		PRI		PC	WHC	lipox	conv	7s-V	11s-L	lect	2s-Alb	7s-V / 11s-L	
			kg/ha	kg/ha	kg/mm	kg/mm	%	#/plant	mg	#/m2	cm	kg/ha	GS6	GS7	GS6	GS7	GS6	GS7	GS6	GS7	%	g/g	%	%	%	%	%	-	
S1	+I	G1	-N	1379	6.4	4.0	55.7	20.0	380	3643	30.0	43.9	0.60	0.45	0.47	0.26	1.37	0.51	-0.01	-0.04	19.9	1.25	7.7	5.3	15.3	32.2	8.8	9.2	0.47
			+N	1723	8.0	5.0	50.1	27.3	349	4955	31.1	54.9	0.62	0.47	0.49	0.28	1.40	0.54	-0.01	-0.04	19.9	1.33	6.3	5.4	13.3	33.0	10.0	8.6	0.40
		G2	-N	795	3.7	2.3	46.2	17.3	255	3139	35.3	25.7	0.56	0.46	0.46	0.28	1.29	0.58	-0.02	-0.03	20.2	1.26	7.2	5.2	18.8	31.9	6.9	10.3	0.59
			+N	1418	6.5	4.1	44.4	33.3	237	5969	37.0	45.1	0.60	0.49	0.47	0.30	1.33	0.61	0.00	-0.03	19.9	1.28	7.3	4.5	16.8	24.9	5.7	9.7	0.70
	-I	G1	-N	1303	29.2	4.5	46.7	22.8	311	4186	27.1	41.0	0.54	0.42	0.43	0.25	1.24	0.50	-0.02	-0.04	19.7	1.32	8.5	6.0	14.7	30.1	8.4	9.9	0.49
			+N	1382	31.0	4.8	49.5	23.2	328	4248	28.3	44.5	0.55	0.43	0.44	0.26	1.29	0.50	-0.02	-0.05	20.1	1.31	7.2	5.6	14.5	31.2	10.2	8.4	0.47
		G2	-N	891	20.0	3.1	46.5	21.9	220	4066	31.3	28.4	0.51	0.44	0.36	0.26	1.02	0.53	-0.01	-0.04	20.0	1.31	7.1	6.2	16.4	32.3	6.9	10.8	0.51
			+N	780	17.5	2.7	37.6	18.8	224	3562	34.3	24.9	0.56	0.46	0.44	0.29	1.28	0.56	-0.02	-0.04	20.0	1.24	7.1	5.5	14.5	32.6	8.6	9.2	0.45
S2	+I	G1	-N	1646	4.7	3.5	49.9	24.3	429	3829	45.1	52.3	0.46	0.48	0.32	0.36	0.91	0.93	-0.04	-0.03	19.8	1.23	7.9	5.3	13.5	30.4	10.1	6.4	0.45
			+N	1837	5.3	4.0	47.9	24.7	411	4470	46.0	58.7	0.45	0.52	0.35	0.40	0.94	1.01	-0.05	-0.03	20.0	1.31	7.2	5.4	13.7	31.7	10.7	6.7	0.43
		G2	-N	846	2.4	1.8	43.0	24.9	328	2577	53.8	26.9	0.47	0.51	0.37	0.37	1.02	0.90	-0.04	-0.04	19.9	1.28	7.6	4.7	13.4	31.9	10.1	7.1	0.42
			+N	1673	4.8	3.6	44.1	30.4	344	4864	58.3	52.3	0.47	0.57	0.37	0.42	1.07	1.05	-0.04	-0.03	19.6	1.27	8.0	4.5	14.1	32.3	8.9	7.8	0.44
	-I	G1	-N	1701	12.1	4.5	43.9	28.4	448	3785	45.0	56.0	0.61	0.43	0.43	0.34	0.96	0.84	-0.02	-0.05	20.6	1.27	5.2	3.4	14.8	34.2	11.1	7.7	0.43
			+N	2237	16.0	5.9	49.3	33.6	439	5079	43.7	70.1	0.61	0.40	0.48	0.32	1.40	0.81	-0.03	-0.04	19.6	1.26	7.2	5.1	14.0	32.5	10.1	7.3	0.43
		G2	-N	1654	11.8	4.3	38.7	32.7	345	4522	52.5	54.2	0.63	0.48	0.39	0.37	1.03	0.88	-0.02	-0.05	20.5	1.24	7.5	5.1	14.0	31.5	10.0	7.3	0.44
			+N	1651	11.8	4.3	39.3	34.8	362	4559	51.5	53.5	0.62	0.48	0.42	0.37	1.06	0.89	-0.03	-0.05	20.3	1.26	7.6	5.6	15.7	29.3	9.4	7.8	0.54
			SE	107	0.9	0.3	1.9	2.4	14	270	1.5	3.5	0.03	0.02	0.04	0.02	0.13	0.04	0.01	0.00	0.2	0.02	0.3	0.2	0.5	1.0	1.0	2.6	0.02