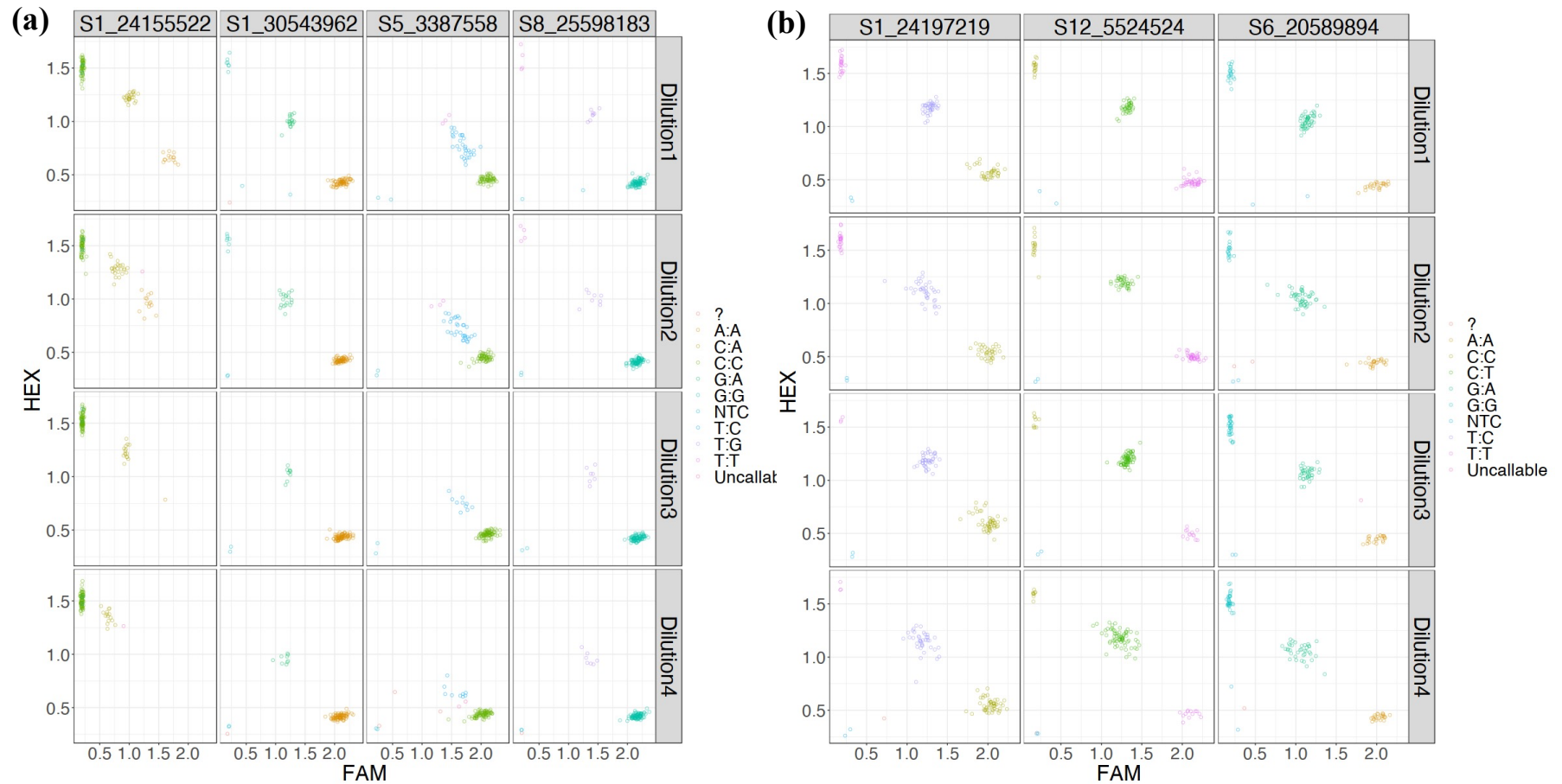


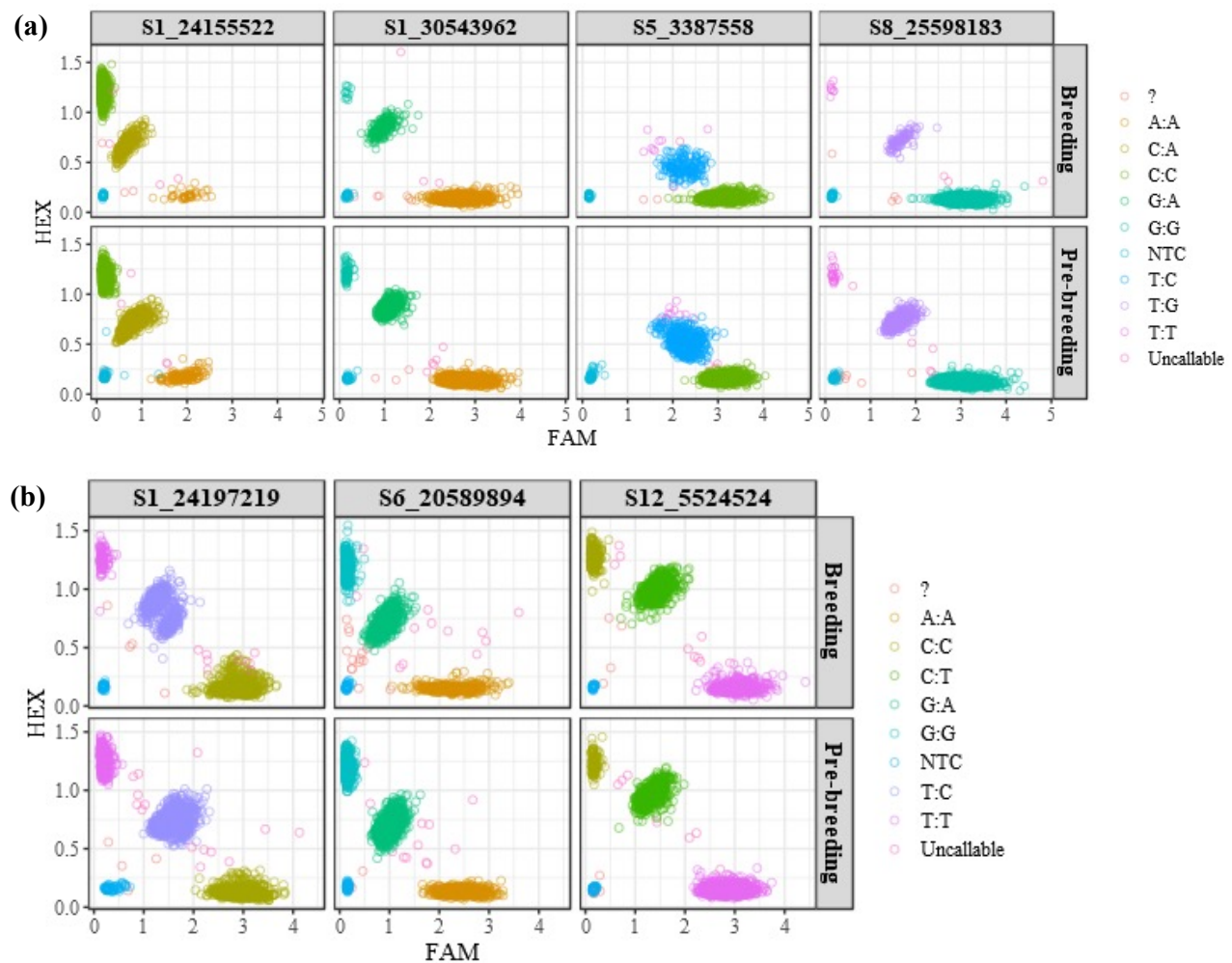
### *Supplementary Material*

WHITE / BLANCO
LIGHT CREAM / CREMA CLARO
CREAM / CREMA
LIGHT YELLOW / AMARILLO CLARO
YELLOW / AMARILLO
YELLOW DEEP / AMARILLO INTENSO
ORANGE / ANARANJADO

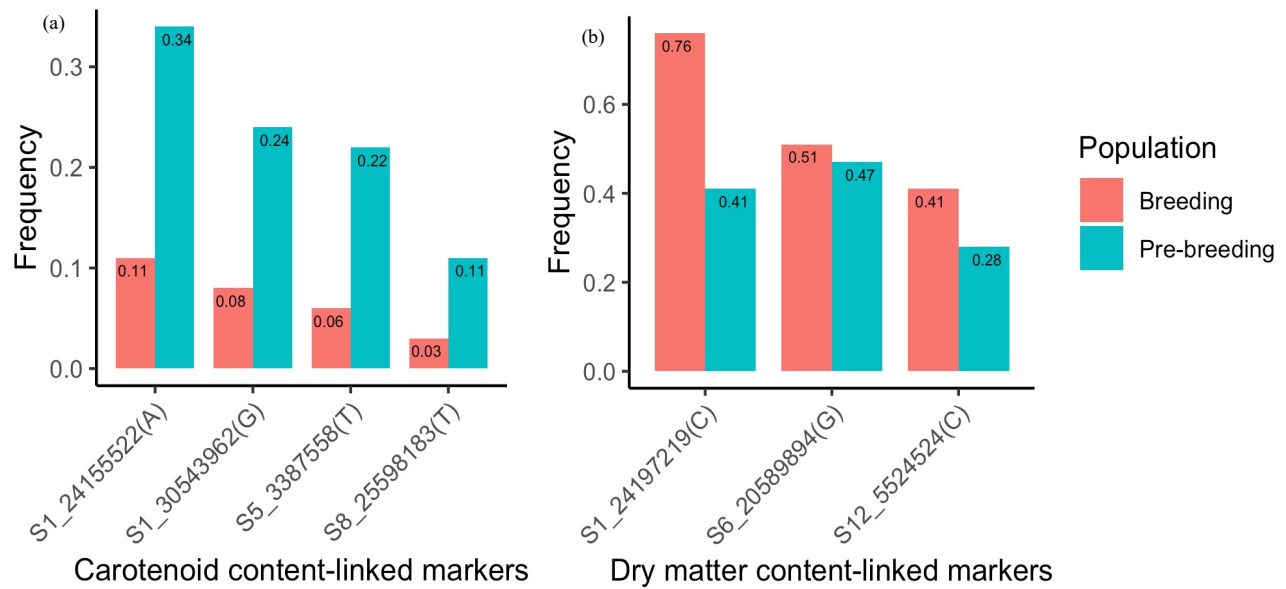
Supplementary Figure 1: Standard color-chart for scoring cassava tissue for carotenoid content



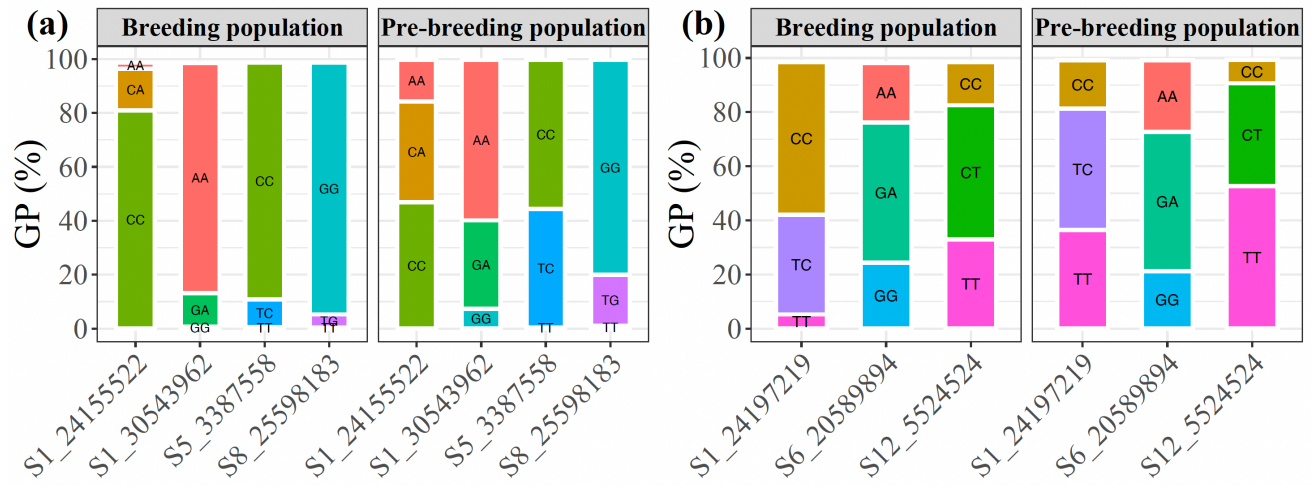
Supplementary Figure 2: Scatter plots of genotypic classes from the KASP marker assays associated with increased (a) carotenoid content and (b) dry matter content in the 188 diverse cassava germplasm used for the technical validation at four DNA concentrations (Dilution 1 = 10X, Dilution 2 = 100X, Dilution 3 = 24X, Dilution 4 = 240)



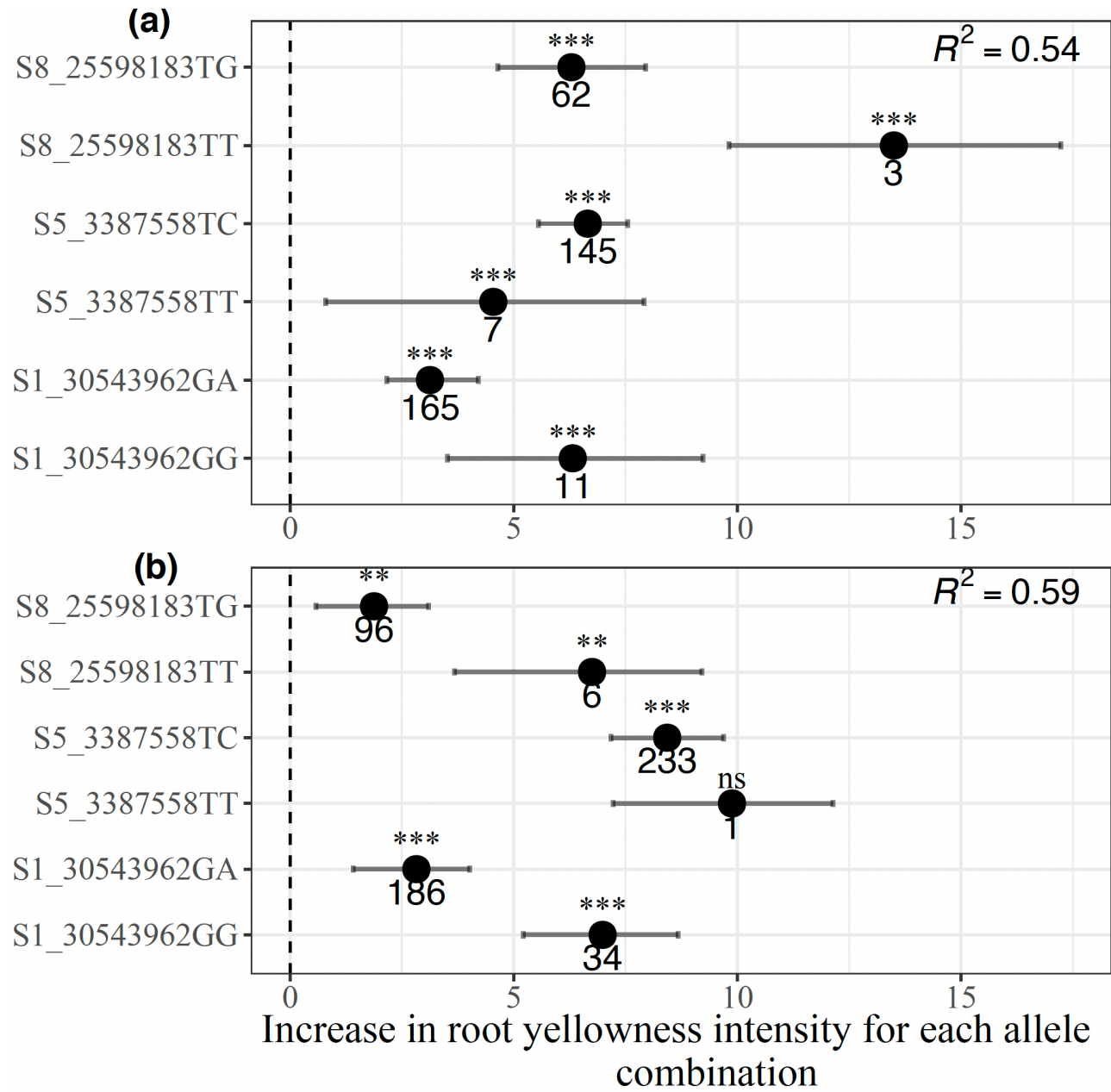
Supplementary Figure 3: Scatter plots of genotypic classes from the KASP marker assays associated with increased (a) carotenoid content and (b) dry matter content in the breeding and pre-breeding populations



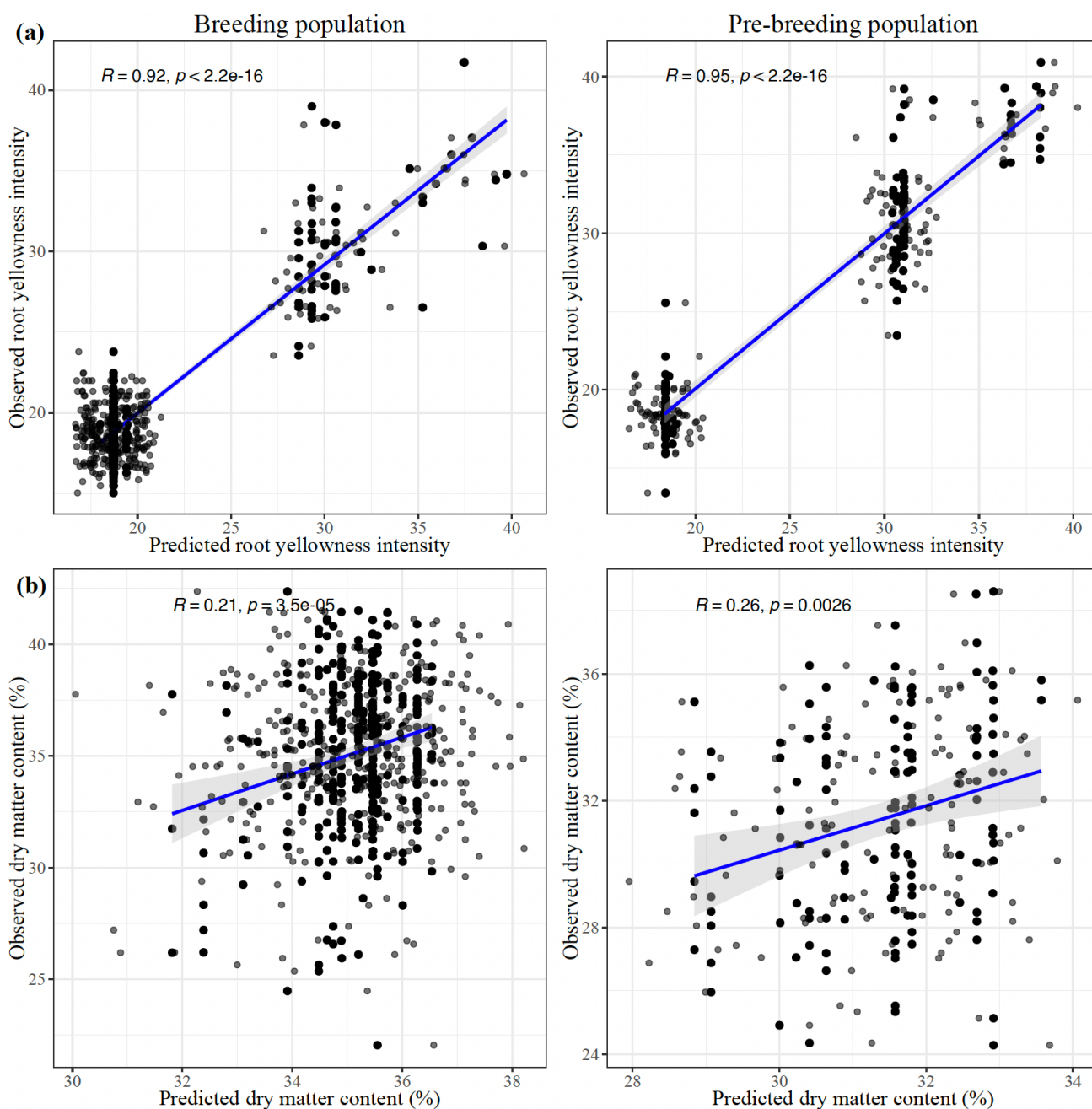
Supplementary Figure 4: Frequencies of favorable alleles at the markers associated with increased (a) carotenoid and (b) dry matter content in the breeding and pre-breeding populations



Supplementary Figure 5: Marker genotype frequencies associated with increased (a) carotenoid content and (b) dry matter content in the breeding and pre-breeding populations  
GP: Genotype percentage



Supplementary Figure 6: Distribution of marker allelic effects associated with increased carotenoid content in (a) breeding, and (b) pre-breeding populations (The multiple linear regression model excluded marker S1\_24155522)



Supplementary Figure 7: Predictive accuracies of the markers associated with increased (a) carotenoid content and, (b) dry matter content in the testing sets of the breeding and pre-breeding populations

Supplementary Table 1: Number of predicted genotypes and uncalleable for markers linked to increased carotenoid content and dry matter content in the breeding and pre-breeding populations

Traits	Populations	S1_24155522				
		AA	CA	CC	Uncallable	Call rate (%)
Carotenoid content	Breeding	40	271	1416	23	98.7
	Pre-breeding	122	296	370	2	99.7
		S1_30543962				
		GG	GA	AA	Uncallable	Call rate (%)
	Breeding	14	216	1495	25	98.6
	Pre-breeding	58	259	470	3	99.6
		S5_3387558				
		TT	TC	CC	Uncallable	Call rate (%)
	Breeding	9	181	1537	23	98.7
	Pre-breeding	3	348	437	2	99.7
		S8_25598183				
		TT	TG	GG	Uncallable	Call rate (%)
	Breeding	7	85	1635	23	98.7
	Pre-breeding	8	150	629	3	99.6
Dry matter content		S1_24197219				
		CC	TC	TT	Uncallable	Call rate (%)
	Breeding	988	644	92	26	98.5
	Pre-breeding	141	354	288	7	99.1
		S6_20589894				
		GG	GA	AA	Uncallable	Call rate (%)
	Breeding	427	905	385	33	98.1
	Pre-breeding	168	406	209	7	99.1
		S12_5524524				
		TT	CT	CC	Uncallable	Call rate (%)
	Breeding	577	867	280	26	98.5
	Pre-breeding	416	300	69	5	99.4