

Supplementary Files

1- General Analysis for both locations together

Supplementary table S1. Means, standard errors, and comparison between SG and NSG for stover production of 16 maize inbred lines of four flowering groups, with contrasting Stay-green phenotype evaluated in 2017 in two locations in Galicia.

Genotype	SG	FG	FF (days)	BL (days)	SWF(g plant ⁻¹)	SWH_R(g plant ⁻¹)	%HFT	SWH_NR(g plant ⁻¹)	%HHT
F030	SG	1	68 ± 9	61 ± 3	109.5 ± 19	38.4 ± 22	81 ± 4	71.3 ± 9	52 ± 7
P033	NSG	1	70 ± 9	50 ± 3	108.8 ± 19	42.8 ± 22	82 ± 4	66.2 ± 9	36 ± 7
EZ59	NSG	2	67 ± 9	53 ± 3	115.5 ± 19	49.8 ± 22	79 ± 4	65.2 ± 9	42 ± 7
F05405	SG	2	73 ± 9	65 ± 3	103.4 ± 19	-6.9 ± 22	85 ± 4	109.9 ± 9	64 ± 7
OQ403	NSG	2	71 ± 9	56 ± 3	81.4 ± 19	-1.4 ± 22	87 ± 4	82.3 ± 9	40 ± 7
PHTE4	SG	2	73 ± 9	63 ± 3	71.7 ± 19	-7.3 ± 22	86 ± 4	78.5 ± 9	52 ± 7
EC402	SG	3	77 ± 9	66 ± 3	118.8 ± 19	5.0 ± 22	83 ± 4	113.0 ± 9	62 ± 7
PHBW8	SG	3	77 ± 9	64 ± 3	133.6 ± 19	31.4 ± 22	81 ± 4	101.3 ± 9	52 ± 7
PHG47	NSG	3	77 ± 9	54 ± 3	77.1 ± 19	13.4 ± 22	85 ± 4	62.8 ± 9	49 ± 7
PHK76	SG	3	76 ± 9	66 ± 3	105.0 ± 20	-12.8 ± 23	85 ± 4	116.5 ± 10	63 ± 7
SD46	NSG	3	79 ± 9	56 ± 3	98.0 ± 20	12.6 ± 23	86 ± 4	84.1 ± 10	57 ± 7
B73	NSG	4	82 ± 9	62 ± 3	140.9 ± 19	-1.0 ± 22	87 ± 4	141.5 ± 9	50 ± 7
PHM10	NSG	4	80 ± 9	60 ± 3	112.7 ± 19	14.6 ± 22	85 ± 4	97.9 ± 9	39 ± 7
PHP38	SG	4	80 ± 9	69 ± 3	108.5 ± 19	-18.0 ± 22	85 ± 4	116.2 ± 9	59 ± 7
PHT11	NSG	4	82 ± 9	62 ± 3	116.3 ± 19	3.9 ± 22	87 ± 4	112.0 ± 9	53 ± 7
PHW79	SG	4	82 ± 9	67 ± 3	135.6 ± 19	-26.9 ± 22	85 ± 4	162.1 ± 9	65 ± 7
SG vs. NSG			-0.2 ± 4.5	9 ± 1**	4.4 ± 9.5	-16.4 ± 4.4**	-0.8 ± 1.7	19.6 ± 4.6**	13 ± 3**

FG: Flowering group (1: very early; 2: early; 3: Medium; 4: Late flowering date); BL (black layer): number of days from silking to physiological maturity; SWF(g plant⁻¹): stover weight at flowering time (g plant⁻¹); %HFT: humidity percentage at FT; SWH_NR(g plant⁻¹): stover weight at harvest time (g plant⁻¹) which the part of the stover that is not remobilized; %HHT: humidity percentage at HT; SWH_R : Stover remobilized which is calculated as the difference between the weight of the stover at flowering and harvest. * and **Significant at P = 0.05 and P = 0.01, respectively.

Supplementary Table S2. Means, standard errors, and comparison between SG and NSG for agronomic characters of 16 maize inbred lines of four flowering groups, with contrasting stay-green phenotype evaluated in 2017 in two locations in Galicia.

Genotypes	SG	FG	GYPE (g plant ⁻¹)	KW 1000 (g)	KM%(PE)	CW(g plant ⁻¹)	CM%	YieldSE (g plant ⁻¹)	%H (SE)
F030	SG	1	71.3 ± 25.3	283.6 ± 21.5	30 ± 14	11.7 ± 2.3	29 ± 11	38.1 ± 15.7	28 ± 20
P033	NSG	1	83.7 ± 25.3	229.4 ± 21.5	27 ± 14	14.5 ± 2.3	14 ± 11	28.0 ± 15.7	19 ± 20
EZ59	NSG	2	32.1 ± 25.31	175.1 ± 21.4	24 ± 14	10.0 ± 2.3	26 ± 11	26.0 ± 15.7	28 ± 20
F05405	SG	2	106.1 ± 25.3	273.2 ± 21.4	21 ± 14	17.8 ± 2.3	31 ± 11	12.6 ± 15.7	23 ± 20
OQ403	NSG	2	44.6 ± 25.3	227.1 ± 21.4	26 ± 14	9.8 ± 2.3	23 ± 11	25.9 ± 15.7	21 ± 20
PHTE4	SG	2	59.3 ± 25.3	273.7 ± 21.4	22 ± 14	14.6 ± 2.3	22 ± 11	46.1 ± 15.7	25 ± 20
EC402	SG	3	94.9 ± 25.3	235.1 ± 21.5	36 ± 14	20.5 ± 2.3	50 ± 11	51.2 ± 15.7	40 ± 20
PHBW8	SG	3	97.3 ± 25.3	275.4 ± 21.5	33 ± 14	23.1 ± 2.3	34 ± 11	49.0 ± 15.7	30 ± 20
PHG47	NSG	3	62.6 ± 25.3	192.2 ± 21.5	24 ± 14	11.6 ± 2.3	22 ± 11	33.9 ± 15.7	23 ± 20
PHK76	SG	3	57.7 ± 25.6	263.6 ± 23.9	40 ± 14	17.2 ± 2.4	41 ± 11	43.4 ± 17.2	35 ± 23
SD46	NSG	3	31.5 ± 25.6	230.9 ± 23.9	33 ± 14	10.9 ± 2.4	25 ± 11	80.8 ± 17.2	/
B73	NSG	4	66.4 ± 25.3	238.8 ± 21.4	32 ± 14	15.7 ± 2.3	44 ± 11	50.6 ± 15.7	40 ± 20
PHM10	NSG	4	59.0 ± 25.3	217.94 ± 21.4	22 ± 14	15.4 ± 2.3	36 ± 11	34.2 ± 15.7	30 ± 20
PHP38	SG	4	83.4 ± 25.3	276.7 ± 21.4	33 ± 14	18.5 ± 2.3	45 ± 11	48.1 ± 15.7	38 ± 20
PHT11	NSG	4	60.7 ± 25.3	256.5 ± 21.4	31 ± 14	13.6 ± 2.3	34 ± 11	22.7 ± 15.7	39 ± 20
PHW79	SG	4	94.1 ± 25.3	292.5 ± 21.4	36 ± 14	27.2 ± 2.3	52 ± 11	62.0 ± 15.7	42 ± 20
SGvsNSG			28.0 ± 9.5*	50.73 ± 6.7**	4 ± 2 ⁿ	6.1 ± 1.2**	9.9 ± 5.0 ⁿ	6.0 ± 7.9 ⁿ	16 ± 10 ⁿ

FG: Flowering group (1: very early; 2: early; 3: Medium; 4: Late flowering date); %H(SE): humidity of secondary ears; YieldSE: yield secondary ears(g plant⁻¹); %CM: cobs humidity; CW: cobs weight (g plant⁻¹); PE: principal ear; GYPE: grain yield of principal ears (g plant⁻¹);KW1000:kernel weight of 1000 grains * and ** Significant at P=0.05and=0.01, respectively. n: no significant.

2- Especific analysis for each location separatly (Tomeza and Xinzo)

Table Supplementary S3 : Chlorophyll content (SPAD), Photosynthetics rate ($\mu\text{mol CO}_2\text{m}^{-2}\text{s}^{-1}$) and quantum efficiency of photosystem II (Fv/Fm)(10^{-3}) and of maize inbred lines since flowering time, evaluated in 2017 in Tomeza location (Spain). Mean $\pm$ stderr are presented.

Genotype	CLOR-M0	CLOR-M15	CLOR-M30	CLOR-M45	CLOR-M60	CLOR-M75	M0FvFm	M15FvFm	M30FvFm	M45FvFm	M60FvFm	M75FvFm	M0photo	M30photo	M60photo
B73	43.7 $\pm$ 2.1	34.9 $\pm$ 2.2		29.1 $\pm$ 3.04	4.9 $\pm$ 3.27	0	765.3 $\pm$ 8.6	780.2 $\pm$ 12.4		699.9 $\pm$ 51.7	0	0	21.01 $\pm$ 1.8	14.9 $\pm$ 1.6	0
EC402	57.3 $\pm$ 2.1	51.5 $\pm$ 2.2	49.57 $\pm$ 2.9	42.2 $\pm$ 3.04	27.1 $\pm$ 3.27	0	808.3 $\pm$ 8.6	765.1 $\pm$ 12.4	772.7 $\pm$ 9.3	764.1 $\pm$ 51.7	561.4 $\pm$ 76.7	0	24.2 $\pm$ 1.8	13.2 $\pm$ 1.6	3.3 $\pm$ 0.7
EZ59	59.3 $\pm$ 2.1	50.8 $\pm$ 2.2	49.2 $\pm$ 2.9	41.4 $\pm$ 3.04	6.9 $\pm$ 3.27	0	763.9 $\pm$ 8.6	730.4 $\pm$ 12.4	782.2 $\pm$ 9.3	765.9 $\pm$ 51.7	177.1 $\pm$ 76.7	0	26.8 $\pm$ 1.8	4.4 $\pm$ 1.6	0
FO30	37.97 $\pm$ 2.1	30.1 $\pm$ 2.2	23.7 $\pm$ 2.9	22.3 $\pm$ 3.04	14.3 $\pm$ 3.27	7.7 $\pm$ 1.08	764.4 $\pm$ 8.6	680.5 $\pm$ 12.4	694.4 $\pm$ 9.3	701.4 $\pm$ 51.7	587.1 $\pm$ 76.7	241.5 $\pm$ 28.4	25.9 $\pm$ 1.8	14.7 $\pm$ 1.6	1.32
F05405	37.3 $\pm$ 2.1	37.4 $\pm$ 2.2	35.1 $\pm$ 2.9	23.5 $\pm$ 3.04	6.8 $\pm$ 3.27	0	778.8 $\pm$ 8.6	755.6 $\pm$ 12.4	750.9 $\pm$ 9.3	729.6 $\pm$ 51.7	252.2 $\pm$ 76.7	0	28.5 $\pm$ 1.8	11.8 $\pm$ 1.6	1.32
OQ403	40.0 $\pm$ 2.1	40.9 $\pm$ 2.2	35.9 $\pm$ 2.9	22.9 $\pm$ 3.04	0	0	775.7 $\pm$ 8.6	761.9 $\pm$ 12.4	760.8 $\pm$ 9.3	549.6 $\pm$ 51.7	0	0	30.4 $\pm$ 1.8	7.6 $\pm$ 1.6	0
P033	42.7 $\pm$ 2.1	36.1 $\pm$ 2.2	27.3 $\pm$ 2.9	23.7 $\pm$ 3.04	4.7 $\pm$ 3.27	0	788.4 $\pm$ 8.6	756.1 $\pm$ 12.4	735.5 $\pm$ 9.3	743.0 $\pm$ 51.7	172.5 $\pm$ 76.7	0	27.4 $\pm$ 1.8	11.0 $\pm$ 1.6	0
PHBW8	42.5 $\pm$ 2.1	39.9 $\pm$ 2.2	32.9 $\pm$ 2.9	23.8 $\pm$ 3.04	2.1 $\pm$ 3.27	0	796.3 $\pm$ 8.6	720.4 $\pm$ 12.4	743.7 $\pm$ 9.3	693.8 $\pm$ 51.7	87.1 $\pm$ 76.7	0	25.5 $\pm$ 1.8	9.6 $\pm$ 1.6	0
PHG47	50.7 $\pm$ 2.1	51.3 $\pm$ 2.2	44.3 $\pm$ 2.9	39.5 $\pm$ 3.04	0	0	797.8 $\pm$ 8.6	767.8 $\pm$ 12.4	780.1 $\pm$ 9.3	735.3 $\pm$ 51.7	0	0	26.2 $\pm$ 1.8	11.8 $\pm$ 1.6	0
PHK76	57.8 $\pm$ 2.1	54.9 $\pm$ 2.2	44.5 $\pm$ 2.9	33.8 $\pm$ 3.04	6.2 $\pm$ 3.27	0	807.0 $\pm$ 8.6	771.4 $\pm$ 12.4	775.2 $\pm$ 9.3	746.9 $\pm$ 51.7	146.7 $\pm$ 76.7	0	29.0 $\pm$ 1.8	15.2 $\pm$ 1.6	0
PHM10	46.9 $\pm$ 2.1	35.7 $\pm$ 2.2	31.4 $\pm$ 5.3	18.8 $\pm$ 3.04	0	0	771.2 $\pm$ 8.6	747.8 $\pm$ 12.4	763.3 $\pm$ 9.3	645.1 $\pm$ 51.7	0	0	23.3 $\pm$ 1.8	7.0 $\pm$ 1.6	0
PHP38	47.2 $\pm$ 2.1	35.3 $\pm$ 2.4		25.4 $\pm$ 3.2	14.6 $\pm$ 3.48	0	754.2 $\pm$ 8.6	785.5 $\pm$ 12.4		745.9 $\pm$ 51.7	703.8 $\pm$ 76.7	0	26.3 $\pm$ 1.8	19.1 $\pm$ 1.6	2.8 $\pm$ 0.7
PHT11	38.5 $\pm$ 2.1	23.7 $\pm$ 2.2		19.2 $\pm$ 3.04	2.4 $\pm$ 3.27	0	747.9 $\pm$ 8.6	770.4 $\pm$ 12.4		703.5 $\pm$ 51.7	80.2 $\pm$ 76.7	0	24.7 $\pm$ 1.8	11.6 $\pm$ 1.6	0
PHTE4	38.3 $\pm$ 2.1	41.6 $\pm$ 2.2	33.2 $\pm$ 2.9	25.6 $\pm$ 3.04	9.2 $\pm$ 3.27	0	757.5 $\pm$ 8.6	727.5 $\pm$ 12.4	739.4 $\pm$ 9.3	619.2 $\pm$ 51.7	334.3 $\pm$ 76.7	0	27.2 $\pm$ 1.8	8.5 $\pm$ 1.6	0
PHW79	51.2 $\pm$ 2.1	46.8 $\pm$ 2.2		44.2 $\pm$ 3.04	32.6 $\pm$ 3.27	22.9 $\pm$ 1.08	780.4 $\pm$ 8.6	775.1 $\pm$ 12.4		756.9 $\pm$ 51.7	743.1 $\pm$ 76.7	671.4 $\pm$ 28.4	21.5 $\pm$ 1.8	21.1 $\pm$ 1.6	12.6 $\pm$ 0.7
SD46	27.9 $\pm$ 2.1	23.9 $\pm$ 2.2	21.8 $\pm$ 3.8	11.2 $\pm$ 3.04	0	0	768.5 $\pm$ 8.6	755.4 $\pm$ 12.4	781.1 $\pm$ 9.3	695.4 $\pm$ 51.7	0	0.00	26.4 $\pm$ 1.8	10.3 $\pm$ 1.6	0
SG	46.2 $\pm$ 2.1	42.3 $\pm$ 2.2	36.5 $\pm$ 2.9	30.2 $\pm$ 3.04	14.1 $\pm$ 1.64	3.8813	781.3 $\pm$ 8.6	747.0 $\pm$ 12.4	746.1 $\pm$ 5.6	719.5 $\pm$ 22.4	421.3 $\pm$ 36.9	115.92 $\pm$ 21.9	26.0 $\pm$ 1.1	14.2 $\pm$ 0.7	2.7 $\pm$ 0.4
NSG	43.5 $\pm$ v	35.3 $\pm$ 2.2	36.9 $\pm$ 2.2	23.5 $\pm$ 3.04	2.1 $\pm$ 1.56	0 ns	768.3	751.5 $\pm$ 12.4	766.1 $\pm$ 6.2	647.4 $\pm$ 20.9	47.8 $\pm$ 35.1	0 ns	25.0 $\pm$ 1.1	9.1 $\pm$ 0.68	0
Pvalue (SGvsNSG)	0.1105	0.0004	0.8592	0.0027	<0.0001	0.0003	0.0124	0.5616	0.0083	0.0205	<.0001	0.00	0.25	<.0001	<0.0001

M0, M15, M30,M45,M60,M75 : senescence moment from flowering ; 15, 30, 45, 60 and 75 days after flowering time. Clor: chlorophyll; photo: photosynthesis.

Table Supplementary S4: . Chlorophyll content (SPAD), Photosynthetic rate ($\mu\text{mol CO}_2\text{m}^{-2}\text{s}^{-1}$) and quantum efficiency of photosystem II (Fv/Fm)(10^{-3}) and of maize inbred lines since flowering time, evaluated in 2017 in Xinzo location (Spain). mean $\pm$ stderrare presented.

Genotypes	CLOR_M0	CLOR_M15	CLOR_M30	CLOR_M45	CLOR_M60	M0FvFm	M15FvFm	M30FvFm	M45FvFm	M60FvFm	M0photo	M30photo	M60photo
PHK76	36.9 $\pm$ 3.1	36.1 $\pm$ 3.1	31.0 $\pm$ 2.3	27.4 $\pm$ 2.4	0	741.8 $\pm$ 21.8	757.19	752.7 $\pm$ 11.9	673.1 $\pm$ 38.8	0	20.9 $\pm$ 2.0	10.5 $\pm$ 1.3	0
B73	36.3 $\pm$ 3.1	33.7 $\pm$ 3.9	23.7 $\pm$ 2.3	16.4 $\pm$ 3.4	0	696.9 $\pm$ 27.3	764.2	579.4 $\pm$ 16.4	700.6 $\pm$ 54.8	0	15.9 $\pm$ 2.7	6.4 $\pm$ 1.9	0
EC402	53.4 $\pm$ 3.1	54.7 $\pm$ 3.9	43.6 $\pm$ 2.3	24.0 $\pm$ 3.4	1.3 $\pm$ 0.3	753.4 $\pm$ 27.3	770.95	735.7 $\pm$ 16.4	687.9 $\pm$ 54.8	10.7 $\pm$ 2.48	21.5 $\pm$ 2.7	12.2 $\pm$ 1.9	0.9 $\pm$ 0.2
EZ59	45.4 $\pm$ 3.1	46.1 $\pm$ 3.	31.9 $\pm$ 2.3	31.5 $\pm$ 3.4	0	743.3 $\pm$ 27.3	691.04	733.4 $\pm$ 16.4	679.9 $\pm$ 54.8	0	24.6 $\pm$ 2.7	0	0
F030	22.6 $\pm$ 3.1	21.7 $\pm$ 4.4	19.9 $\pm$ 2.3	14.2 $\pm$ 3.4	0	729.8 $\pm$ 27.3	611.69	725.8 $\pm$ 16.4	604.6 $\pm$ 54.8	0	22.4 $\pm$ 2.7	15.4 $\pm$ 1.9	0
F05405	32.0 $\pm$ 3.1	37.1 $\pm$ 3.9	31.5 $\pm$ 2.3	24.3 $\pm$ 3.4	0	724.6 $\pm$ 27.3	771.7	765.4 $\pm$ 16.4	694.6 $\pm$ 54.8	0	24.9 $\pm$ 2.7	10.8 $\pm$ 1.9	0
SD46	16.9 $\pm$ 3.1	17.8 $\pm$ 3.9	16.9 $\pm$ 2.3	15.3 $\pm$ 3.4	0	684.0 $\pm$ 27.3	759.29	761.7 $\pm$ 16.4	670.5 $\pm$ 54.8	0	19.7 $\pm$ 2.7	15.6 $\pm$ 1.9	0.5 $\pm$ 0.2
OQ403	37.4 $\pm$ 3.1	31.3 $\pm$ 3.9	23.3 $\pm$ 2.3	23.2 $\pm$ 3.4	0	761.0 $\pm$ 27.3	725.05	773.7 $\pm$ 18.8	718.0 $\pm$ 54.8	0	17.2 $\pm$ 2.7	12.2 $\pm$ 1.9	0
P033	30.2 $\pm$ 3.1	30.0 $\pm$ 3.9	22.8 $\pm$ 2.3	18.2 $\pm$ 3.4	0	763.6 $\pm$ 27.3	698.1	743.4 $\pm$ 16.4	654.6 $\pm$ 54.8	0	20.4 $\pm$ 2.7	11.9 $\pm$ 1.9	0
PHBW8	31.1 $\pm$ 3.1	32.6 $\pm$ 3.9	29.2 $\pm$ 2.3	21.9 $\pm$ 3.4	0	709.4 $\pm$ 27.3	762.95	725.9 $\pm$ 16.4	548.9 $\pm$ 54.8	0	21.9 $\pm$ 2.7	10.3 $\pm$ 1.9	0
PHG47	44.9 $\pm$ 3.1	44.7 $\pm$ 3.9	41.2 $\pm$ 2.3	29.9 $\pm$ 3.4	0	739.5 $\pm$ 27.3	778.71	710.5 $\pm$ 16.4	606.6 $\pm$ 54.8	0	24.6 $\pm$ 2.7	10.4 $\pm$ 1.9	0
PHM10	34.7 $\pm$ 3.1	29.6 $\pm$ 3.9	25.2 $\pm$ 2.3	18.5 $\pm$ 3.4	0	727.6 $\pm$ 27.3	789.65	750.8 $\pm$ 16.4	692.9 $\pm$ 54.8	0	20.0 $\pm$ 2.7	7.9 $\pm$ 1.9	0
PHP38	27.3 $\pm$ 3.1	26.9 $\pm$ 3.9	25.1 $\pm$ 2.3	15.4 $\pm$ 3.4	0	690.5 $\pm$ 27.3	769.8	743.4 $\pm$ 16.4	678.6 $\pm$ 54.8	0	19.8 $\pm$ 2.7	13.5 $\pm$ 1.9	0
PHT11	20.6 $\pm$ 3.1	18.5 $\pm$ 3.9	15.8 $\pm$ 2.3	6.2 $\pm$ 3.4	0	711.6 $\pm$ 27.3	767.15	677.9 $\pm$ 16.4	343.9 $\pm$ 54.8	0	20.2 $\pm$ 2.7	5.9 $\pm$ 1.9	0
PHTE4	35.5 $\pm$ 3.1	28.9 $\pm$ 3.9	22.1 $\pm$ 2.3	15.7 $\pm$ 3.4	0	708.6 $\pm$ 27.3	695.81	725.3 $\pm$ 16.4	638.1 $\pm$ 54.8	0	19.9 $\pm$ 2.7	10.4 $\pm$ 1.9	0
PHW79	37.8 $\pm$ 3.1	36.5 $\pm$ 3.9	32.0 $\pm$ 2.3	27.5 $\pm$ 3.4	0	716.1 $\pm$ 27.3	779	725.9 $\pm$ 16.4	725.9 $\pm$ 54.8	0	18.7 $\pm$ 2.7	16.3 $\pm$ 1.9	0.9 $\pm$ 0.2
SG	34.2 $\pm$ 2.4	34.4 $\pm$ 2.5	29.0 $\pm$ 1.9	20.4 $\pm$ 1.7	0.2 $\pm$ 0.1	718.9 $\pm$ 15.5	737.41	735.3 $\pm$ 10.0	652.84 $\pm$ 27.8	1.5 $\pm$ 2.48	21.3 $\pm$ 1.4	12.7 $\pm$ 0.9	0.3 $\pm$ 0.2
NSG	35.6 $\pm$ 2.4	33.4 $\pm$ 2.5	26.4 $\pm$ 1.9	20.5 $\pm$ 1.7	0	734.8 $\pm$ 15.5	744.84	707.4 $\pm$ 10.2	628.1 $\pm$ 27.3	0	20.4 $\pm$ 1.4	7.8 $\pm$ 0.9	0
Pvalue (SGvsNSG)	0.6266	0.7476	0.3230	0.9615	0.322	0.219	0.614	0.0567	0.5276	0.322	0.5108	0.0004	0.01

M0, M15, M30, M45, M60, M75 : senescence moment from flowering ; 15, 30, 45, 60 and 75 days after flowering time. Clor: chlorophyll; photo: photosynthesis.

Table Supplementary S5: Means, standard errors, and comparison between SG and NSG for stover production of maize inbred lines, with contrasting Stay-green phenotype evaluated in 2017 in Tomeza location (Spain).

Genotypes	FF (days)	SWF(g plant ⁻¹)	SWH_R(g plant ⁻¹)	%HFT	SWH_NR(g plant ⁻¹)	%HHT
B73	74.5 ± 0.5	131.0 ± 10.2	8.7 ± 2.6	87.9 ± 1.4	122.3 ± 7.6	41.1 ± 1.9
EC402	67.6 ± 0.5	129.2 ± 10.2	22.8 ± 2.6	81.1 ± 1.4	106.4 ± 7.6	64.7 ± 1.9
EZ59	57.9 ± 0.5	140.4 ± 10.2	82.4 ± 2.6	73.2 ± 1.4	57.9 ± 7.6	46.6 ± 1.9
FO30	59.4 ± 0.5	140.0 ± 10.2	69.9 ± 2.6	74.7 ± 1.4	70.0 ± 7.6	61.8 ± 1.9
F05405	64.1 ± 0.5	119.7 ± 10.2	9.5 ± 2.6	83.1 ± 1.4	110.1 ± 7.6	66.2 ± 1.9
OQ403	63.0 ± 0.5	88.9 ± 10.2	10.7 ± 2.6	84.9 ± 1.4	78.3 ± 7.6	36.4 ± 1.9
P033	59.4 ± 0.5	139.4 ± 10.2	75.4 ± 2.6	76.2 ± 1.4	64.0 ± 7.6	49.8 ± 1.9
PHBW8	67.8 ± 0.5	155.5 ± 10.2	55.6 ± 2.6	78.2 ± 1.4	99.9 ± 7.6	53.5 ± 1.9
PHG47	68.1 ± 0.5	83.1 ± 10.2	26.3 ± 2.6	83.8 ± 1.4	56.8 ± 7.6	47.7 ± 1.9
PHK76	67.4 ± 0.5	117.7 ± 10.2	5.3 ± 2.6	83.6 ± 1.4	112.4 ± 7.6	63.7 ± 1.9
PHM10	71.5 ± 0.5	115.8 ± 10.2	26.0 ± 2.6	86.4 ± 1.4	89.8 ± 7.6	30.5 ± 1.9
PHP38	71.9 ± 0.5	110.8 ± 10.9	-10.1 ± 2.6	86.3 ± 1.4	120.9 ± 7.6	57.3 ± 1.9
PHT11	71.9 ± 0.5	119.77 ± 10.2	8.6 ± 2.6	87.7 ± 1.4	111.2 ± 7.6	45.8 ± 1.9
PHTE4	65.3 ± 0.5	80.6 ± 10.2	3.1 ± 2.6	84.9 ± 1.4	77.4 ± 7.6	56.8 ± 1.9
PHW79	74.4 ± 0.5	139.5 ± 10.2	-24.1 ± 2.6	85.2 ± 1.4	163.6 ± 7.6	65.7 ± 1.9
SD46	70.4 ± 0.5	110.7 ± 10.2	30.6 ± 2.6	84.5 ± 1.4	80.0 ± 7.6	58.1 ± 1.9
SG	67.2 ± 0.5	124.3 ± 4.2	16.7 ± 1.3	82.1 ± 0.6	107.6 ± 5.5	61.2 ± 1.1
NSG	67.9 ± 0.5	110.3 ± 3.9	26.9 ± 1.3	83.4 ± 0.6	83.4 ± 5.4	43.3 ± 1.1
Pvalue (SGvsNSG)	0.4324	0.0158	<0.0001	0.1522	<0.0001	<0.0001

SWF(g plant⁻¹): stover weight at flowering time (g plant⁻¹) ; %HFT: humidity percentage at FT; SWH_NR(g plant⁻¹): stover weight at harvest time (g plant⁻¹) which the part of the stover that is not remobilized; %HHT: humidity percentage at HT; SWH_R : Stover remobilized which is calculated as the difference between the weight of the stover at flowering and harvest..

Table Supplementary S6: Means, Standard errors, and comparison between SG and NSG for agronomic characters of maize inbred lines with contrasting stay-green phenotype evaluated in 2017 in two locations in Tomeza location (Spain).

Genotypes	GYPE(g plant ⁻¹)	KW 1000(g)	KM%(PE)	CW(g plant ⁻¹)	CM%	YieldSE (g plant ⁻¹)	%H(SE)
B73	81.2 ± 5.3	248.0 ± 9.5	17.8 ± 3.7	18.7 ± 1.0	25.9 ± 2.6	76.7 ± 11.0	22.6 ± 22.6
EC402	90.9 ± 5.3	259.4 ± 9.5	20.9 ± 3.7	21.0 ± 1.0	38.7 ± 2.6	61.6 ± 11.0	26.6 ± 22.6
EZ59	40.5 ± 5.3	183.6 ± 9.5	13.5 ± 3.7	10.7 ± 1.0	15.3 ± 2.6	28.0 ± 11.0	19.0 ± 22.6
FO30	72.6 ± 5.3	301.7 ± 9.5	14.9 ± 3.7	13.9 ± 1.0	22.7 ± 2.6	45.3 ± 11.0	20.9 ± 22.6
F05405	108.9 ± 5.3	281.5 ± 9.5	13.4 ± 3.7	18.2 ± 1.0	18.1 ± 2.6	12.7 ± 11.0	8.8 ± 22.6
OQ403	59.8 ± 5.3	220.1 ± 9.5	12.4 ± 3.7	12.3 ± 1.0	13.4 ± 2.6	34.1 ± 11.0	15.9 ± 22.6
P033	90.2 ± 5.3	220.5 ± 9.5	13.0 ± 3.7	18.4 ± 1.0	13.8 ± 2.6	33.2 ± 11.0	16.9 ± 22.6
PHBW8	107.5 ± 5.3	302.4 ± 9.5	15.6 ± 3.7	24.1 ± 1.0	22.9 ± 2.6	62.6 ± 11.0	18.9 ± 22.6
PHG47	71.9 ± 5.3	200.4 ± 9.5	12.7 ± 3.7	11.2 ± 1.0	13.6 ± 2.6	44.4 ± 11.0	15.6 ± 22.6
PHK76	62.0 ± 5.3	281.1 ± 9.5	25.5 ± 3.7	17.7 ± 1.0	30.7 ± 2.6	54.4 ± 11.0	24.2 ± 22.6
PHM10	76.3 ± 5.3	223.5 ± 9.5	12.4 ± 3.7	16.5 ± 1.0	24.7 ± 2.6	54.3 ± 11.0	14.9 ± 22.6
PHP38	101.6 ± 5.3	307.5 ± 9.5	16.2 ± 3.7	21.9 ± 1.0	27.7 ± 2.6	69.8 ± 11.0	21.4 ± 22.6
PHT11	79.0 ± 5.3	276.4 ± 9.5	13.1 ± 3.7	17.1 ± 1.0	17.2 ± 2.6	41.9 ± 11.0	17.0 ± 22.6
PHTE4	71.3 ± 5.3	252.9 ± 9.5	13.8 ± 3.7	15.8 ± 1.0	17.3 ± 2.6	48.2 ± 11.0	17.7 ± 22.6
PHW79	102.9 ± 5.3	340.1 ± 9.5	19.2 ± 3.7	28.8 ± 1.0	39.2 ± 2.6	88.2 ± 11.0	30.4 ± 22.6
SD46	45.9 ± 5.3	248.3 ± 9.5	19.3 ± 3.7	11.4 ± 1.0	15.0 ± 2.6	91.8 ± 11.0	0
SG	89.7 ± 3.8	290.8 ± 9.5	17.5 ± 1.7	20.2 ± 1.0	27.2 ± 1.3	55.4 ± 4.7	21.1 ± 8.4
NSG	62.9 ± 3.6	231.0 ± 9.5	18.3 ± 1.6	14.2 ± 1.0	17.9 ± 1.2	46.3 ± 4.4	8.7 ± 7.9
Pvalue (SGvsNSG)	<0.0001	<0.0001	0.7073	<0.0001	<0.0001	0.1627	0.2772

%H(SE): humidity of secondary ears; SE; secondary ears; %CM: cobs humidity; CW: cobs weight (g plant⁻¹); PE: principal ear; GYPE: grain yield of principal ears (g plant⁻¹);KW1000:kernel weight of 1000 grains .

Table Supplementary S7: Means, **Standard** errors, and comparison between SG and NSG for stover production of maize inbred lines, with contrasting Stay-green phenotype evaluated in 2017 in Xinzo location (Spain).

Genotypes	FF (days)	SWF(g plant ⁻¹)	SWH_R(g plant ⁻¹)	%HFT	SWH_NR(g plant ⁻¹)	%HHT
PHK76	80.5 ± 1.8	90.8 ± 7.4	-32.7 ± 5.0	83.3 ± 0.6	113.2 ± 6.8	51.0 ± 2.0
B73	90.7 ± 2.4	161.9 ± 9.8	-87.9 ± 5.0	85.6 ± 0.8	178.7 ± 9.1	61.5 ± 2.7
EC402	86.8 ± 2.4	110.7 ± 9.8	-38.5 ± 5.0	85.6 ± 0.8	125.2 ± 9.1	56.8 ± 2.7
EZ59	76.5 ± 2.4	79.9 ± 9.8	-2.9 ± 5.0	86.7 ± 0.8	79.5 ± 9.1	35.7 ± 2.7
F030	76.5 ± 2.4	76.9 ± 9.8	2.5 ± 5.0	86.8 ± 0.8	74.0 ± 9.1	42.5 ± 2.7
F05405	81.3 ± 2.4	85.1 ± 9.8	-27.8 ± 5.0	86.6 ± 0.8	109.1 ± 9.1	62.3 ± 2.7
SD46	85.0 ± 2.4	81.0 ± 9.8	6.9 ± 5.0	85.9 ± 0.8	78.0 ± 9.1	62.8 ± 2.7
OQ403	77.5 ± 2.4	80.4 ± 9.8	-12.7 ± 5.0	88.2 ± 0.8	90.2 ± 9.1	47.6 ± 2.7
P033	80.8 ± 2.4	75.8 ± 9.8	9.9 ± 5.0	87.9 ± 0.8	70.8 ± 9.1	20.5 ± 2.7
PHBW8	85.3 ± 2.4	102.3 ± 9.8	-17.8 ± 5.0	83.4 ± 0.8	103.1 ± 9.1	50.9 ± 2.7
PHG47	85.8 ± 2.4	77.6 ± 9.8	11.9 ± 5.0	85.3 ± 0.8	73.9 ± 9.1	53.3 ± 2.7
PHM10	87.8 ± 2.4	107.6 ± 9.8	-25.2 ± 5.0	83.4 ± 0.8	112.9 ± 9.1	51.9 ± 2.7
PHP38	87.3 ± 2.4	103.9 ± 9.8	-18.7 ± 5.0	84.1 ± 0.8	105.9 ± 9.1	58.4 ± 2.7
PHT11	93.8 ± 2.4	110.5 ± 9.8	-18.9 ± 5.0	86.1 ± 0.8	112.6 ± 9.1	60.7 ± 2.7
PHTE4	80.5 ± 2.4	68.0 ± 9.8	0	85.2 ± 0.8	80.4 ± 9.1	43.4 ± 2.7
PHW79	90.8 ± 2.4	129.1 ± 9.8	-67.5 ± 5.0	84.8 ± 0.8	158.2 ± 9.1	59.2 ± 2.7
SG	84.0 ± 1.5	96.6 ± 5.6	-23.9 ± 2.3	85.2 ± 0.5	108.0 ± 6.7	53.4 ± 2.3
NSG	84.7 ± 1.5	99.0 ± 5.6	-17.9 ± 2.3	86.2 ± 0.5	102.7 ± 6.7	47.3 ± 2.3
Pvalue (SGvsNSG)	0.7348	0.7509	0.5738	0.0387	0.5738	0.0652

SWF(g plant⁻¹): stover weight at flowering time (g plant⁻¹) ; %HFT: humidity percentage at FT; SWH_NR(g plant⁻¹): stover weight at harvest time (g plant⁻¹) which the part of the stover that is not remobilized; %HHT: humidity percentage at HT; SWH_R : Stover remobilized which is calculated as the difference between the weight of the stover at flowering and harvest..

Table Supplementary S8: Means, Standard errors, and comparison between SG and NSG for agronomic characters of maize inbred lines with contrasting stay-green phenotype evaluated in 2017 in two locations in Xinzo location (Spain).

Genotypes	GYPE(g plant ⁻¹)	KW 1000(g)	KM%(PE)	CW(g plant ⁻¹)	CM%	Yield SE (g plant ⁻¹)	%H(SE)
PHK76	41.4 ± 3.7	229.5 ± 23.6	48.3 ± 5.12	20.7 ± 1.3	44.6 ± 3.5	32.4 ± 4.7	43.3 ± 3.2
B73	16.6 ± 4.9	237.6 ± 33.0	46.8 ± 7.2	12.2 ± 1.8	65.8 ± 4.4	19.4 ± 6.2	64.3 ± 4.6
EC402	37.6 ± 4.9	200.6 ± 33.0	50.5 ± 7.2	19.9 ± 1.8	61.6 ± 4.4	41.1 ± 6.2	56.6 ± 4.6
EZ59	15.2 ± 4.9	154.0 ± 33.0	34.3 ± 7.2	9.7 ± 1.8	37.6 ± 4.4	25.7 ± 6.2	36.9 ± 4.6
F030	31.9 ± 4.9	249.8 ± 33.0	46.4 ± 7.2	9.9 ± 1.8	37.8 ± 4.4	30.3 ± 6.2	33.6 ± 4.6
F05405	64.3 ± 4.9	252.4 ± 33.0	25.4 ± 7.2	18.1 ± 1.8	46.5 ± 4.4	15.9 ± 6.2	40.5 ± 4.6
SD46	26.6 ± 4.9	235.3 ± 33.0	52.0 ± 7.2	7.4 ± 1.8	60.4 ± 4.4	32.2 ± 6.2	41.1 ± 4.6
OQ403	11.3 ± 4.9	236.9 ± 33.0	41.2 ± 7.2	5.9 ± 1.8	31.7 ± 4.4	13.2 ± 6.2	21.5 ± 4.6
P033	35.9 ± 4.9	249.7 ± 33.0	40.2 ± 7.2	9.5 ± 1.8	11.0 ± 4.4	24.3 ± 6.2	13.2 ± 4.6
PHBW8	28.3 ± 4.9	235.3 ± 33.0	52.3 ± 7.2	21.5 ± 1.8	45.4 ± 4.4	32.8 ± 6.2	43.8 ± 4.6
PHG47	29.9 ± 4.9	189.9 ± 33.0	33.7 ± 7.2	13.0 ± 1.8	28.7 ± 4.4	23.8 ± 6.2	29.3 ± 4.6
PHM10	24.4 ± 4.9	224.2 ± 33.0	26.5 ± 7.2	15.4 ± 1.8	43.3 ± 4.4	14.8 ± 6.2	50.4 ± 4.6
PHP38	20.4 ± 4.9	232.3 ± 33.0	51.1 ± 7.2	14.1 ± 1.8	66.0 ± 4.4	25.4 ± 6.2	61.9 ± 4.6
PHT11	14.8 ± 4.9	233.9 ± 33.0	51.8 ± 7.2	9.0 ± 1.8	53.2 ± 4.4	5.1 ± 6.2	73.9 ± 4.6
PHTE4	19.2 ± 4.9	311.2 ± 33.0	27.9 ± 7.2	13.4 ± 1.8	22.6 ± 4.4	45.7 ± 6.2	30.5 ± 4.6
PHW79	26.9 ± 4.9	214.5 ± 33.0	53.4 ± 7.2	26.3 ± 1.8	62.2 ± 4.4	30.4 ± 6.2	56.2 ± 4.6
SG	32.7 ± 3.0	242.3 ± 17.7	43.8 ± 2.8	17.6 ± 1.0	48.9 ± 3.3	31.7 ± 2.9	46.2 ± 3.6
NSG	21.2 ± 3.0	218.0 ± 17.7	39.2 ± 2.8	10.7 ± 1.0	38.8 ± 3.3	18.0 ± 2.9	41.4 ± 3.6
Pvalue (SGvsNSG)	0.0052	0.1691	0.2418	<0.0001	0.0365	<0.0001	0.3465

%H(SE): humidity of secondary ears; SE: secondary ears; %CM: cobs humidity; CW: cobs weight (g plant⁻¹); PE: principal ear; GYPE: grain yield of principal ears (g plant⁻¹);KW1000:kernel weight of 1000 grains .

Table Supplementary S9: : Total N content at silking time and physiological maturity of plant stover (leaf and stem), N-content in grain of maize inbred lines, evaluated in 2017 in Tomeza and Xinzo location.

Location	Tomeza			Xinzo		
Genotypes	TN_UF(g plant ⁻¹)	TN_AF (g plant ⁻¹)	KN (g plant ⁻¹)	TN_UF(g plant ⁻¹)	TN_AF (g plant ⁻¹)	KN (g plant ⁻¹)
B73	1,9 ± 0,1	1,0 ± 0,1	1,5 ± 0,03	2,2 ± 0,1	1,5 ± 0,1	2,3 ± 0,1
EC402	2,6 ± 0,1	1,4 ± 0,1	1,9 ± 0,03	2,5 ± 0,1	1,6 ± 0,1	2,2 ± 0,1
EZ59	2,3 ± 0,1	1,3 ± 0,1	2,0 ± 0,03	2,4 ± 0,1	1,7 ± 0,1	2,4 ± 0,1
F030	2,1 ± 0,1	1,4 ± 0,1	1,8 ± 0,03	2,4 ± 0,1	1,5 ± 0,1	1,9 ± 0,1
F05405	2,1 ± 0,1	1,3 ± 0,1	1,7 ± 0,03	2,3 ± 0,1	1,5 ± 0,1	1,9 ± 0,1
OQ403	2,2 ± 0,1	1,0 ± 0,1	1,9 ± 0,03	2,2 ± 0,1	1,3 ± 0,1	2,0 ± 0,1
P033	1,9 ± 0,1	1,1 ± 0,1	1,8 ± 0,03	2,2 ± 0,1	1,1 ± 0,1	2,1 ± 0,1
PHBW8	2,0 ± 0,1	0,9 ± 0,1	1,7 ± 0,03	2,1 ± 0,1	1,3 ± 0,1	1,8 ± 0,1
PHG47	2,7 ± 0,1	1,2 ± 0,1	1,7 ± 0,03	2,5 ± 0,1	1,5 ± 0,1	2,1 ± 0,1
PHK76	2,2 ± 0,1	1,3 ± 0,1	1,7 ± 0,03	2,0 ± 0,1	1,1 ± 0,1	2,1 ± 0,1
PHM10	2,1 ± 0,1	1,0 ± 0,1	1,7 ± 0,03	2,0 ± 0,1	1,4 ± 0,1	2,3 ± 0,1
PHP38	2,2 ± 0,1	1,2 ± 0,1	1,8 ± 0,03	2,1 ± 0,1	1,5 ± 0,1	2,1 ± 0,1
PHT11	1,9 ± 0,1	1,1 ± 0,1	1,6 ± 0,03	2,1 ± 0,1	1,6 ± 0,1	2,0 ± 0,1
PHTE4	2,1 ± 0,1	1,2 ± 0,1	1,6 ± 0,03	2,3 ± 0,1	1,2 ± 0,1	2,0 ± 0,1
PHW79	1,6 ± 0,1	0,9 ± 0,1	1,4 ± 0,03	1,8 ± 0,1	1,2 ± 0,1	1,8 ± 0,1
SD46	2,0 ± 0,1	1,1 ± 0,1	1,7 ± 0,03	2,2 ± 0,1	1,4 ± 0,1	2,1 ± 0,1
NSG	2,1 ± 0,03	1,1 ± 0,03	1,8 ± 0,01	2,2 ± 0,03	1,4 ± 0,03	2,2 ± 0,03
SG	2,1 ± 0,1	1,2 ± 0,1	1,7 ± 0,01	2,2 ± 0,03	1,3 ± 0,03	2,0 ± 0,03
SGvsNSG	0,5067	0,229	0,0018	0,6993	0,0592	0,0022

TN_UF: N-stover content at flowering time which is the N uptake until flowering; TN_AF: N uptake after flowering by the whole plant; KN: N- kernel content at harvest time.