

Table S1. Development of soybean cultivars (mean \pm SD for 2016-2019) – Wrocław 51°10' N, 17°06' E (south-western Poland).

Growing stage in scale BBCH	Sowing date					
	I		II		III	
	Cultivars					
	Lissabon	Merlin	Lissabon	Merlin	Lissabon	Merlin
	Number of days from sowing to:					
Emergence 10	21 ± 8.5	20 ± 7.8	15 ± 7.3	15 ± 6.3	15 ± 2.5	15 ± 2.1
Flower buds on main stem 51	52 ± 5.3	52 ± 7.4	45 ± 4.9	44 ± 4.6	40 ± 4.1	39 ± 4.1
Beginning of flowering 61	56 ± 5.7	55 ± 5.3	49 ± 4.1	48 ± 2.5	45 ± 3.1	43 ± 3.4
End of flowering 69	82 ± 10.6	81 ± 10.4	75 ± 11.2	73 ± 10.7	71 ± 11.6	67 ± 10.5
Maturity 89	139 ± 8.6	137 ± 8.9	130 ± 6.3	129 ± 6.8	126 ± 10.6	123 ± 10.0

Sowing dates: I – the earliest (16-21.04), II – delayed 10 days in relation to the earliest date (26.04-10.05), III – delayed 20 days in relation to the earliest (06-19.05)

Table S2. Soybean seed yield [Mg ha⁻¹] – Wrocław 51°10' N, 17°06' E (south-western Poland).

Specification	N	Mean	SD	SE
Total mean	96	2.68	0.490	0.050
Year				
2016	24	3.30a	0.342	0.070
2017	24	2.18d	0.313	0.064
2018	24	2.47c	0.162	0.033
2019	24	2.76b	0.177	0.036
Sowing dates				
I	32	2.79a	0.529	0.094
II	32	2.74a	0.500	0.088
III	32	2.50b	0.394	0.070
Cultivars				
Lissabon	48	2.73a	0.427	0.062
Merlin	48	2.63b	0.545	0.079

Sowing dates: I – the earliest (16-21.04), II – delayed 10 days in relation to the earliest date (26.04-10.05), III – delayed 20 days in relation to the earliest (06-19.05).

N – sample size; SD – standard deviation; SE – standard error.

Different letters indicate a significant difference (Tukey's multiple range test).

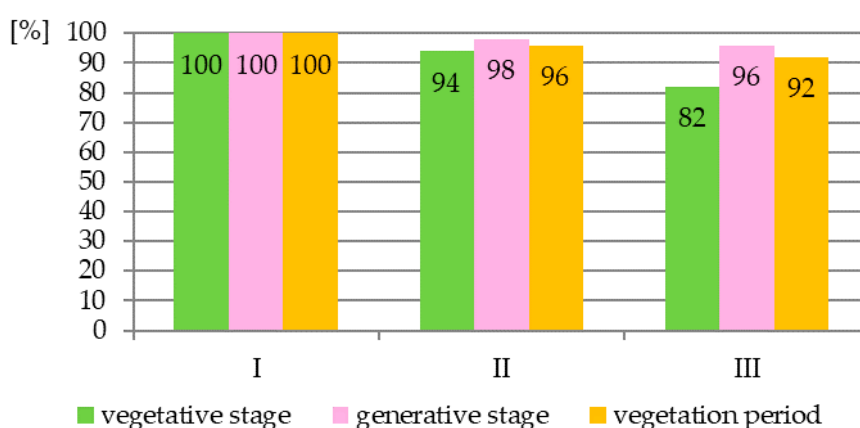


Figure S1. Relation between sowing date and the sum of day length during soybean development in reference to the 1st sowing date (Sowing dates: I – the earliest, II – delayed 10 days in relation to the earliest date, III – delayed 20 days in relation to the earliest). The values shown in the figure can be described by the equation: $\%A_i = (A_i \cdot 100) / A_i$; where A = sum of day length measured in hours during soybean development from sowing date and “i” is the period of the development stage corresponding to sowing dates I, II, III.

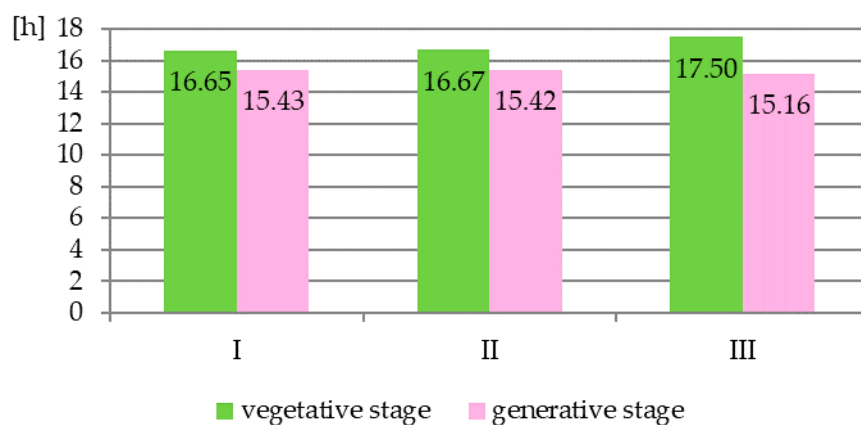


Figure S2. Effect of sowing date on mean day length [h] during vegetative and generative development of soybean (Sowing dates: I – the earliest, II – delayed 10 days in relation to the earliest date, III – delayed 20 days in relation to the earliest).

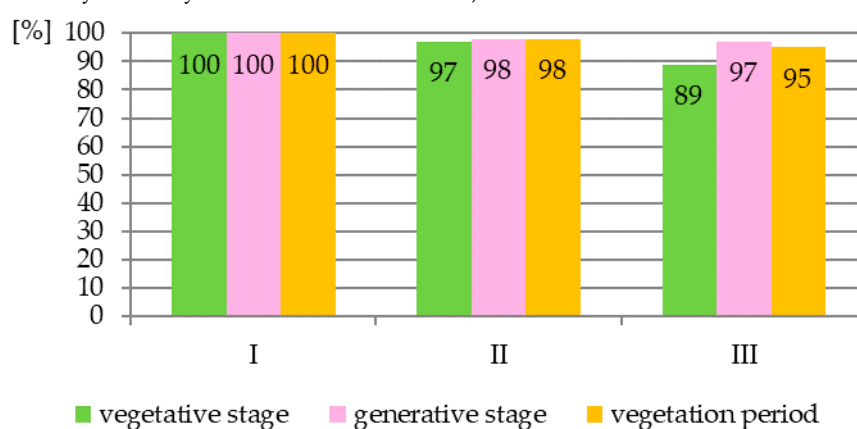


Figure S3. Relation between sowing date and the sum of mean daily temperatures during soybean development in reference to the 1st sowing date (Sowing dates: I – the earliest, II – delayed 10 days in relation to the earliest date, III – delayed 20 days in relation to the earliest). The values shown in the figure can be described by the equation: $\%B_i = (B_i \cdot 100) / B_i$, where B = sum of mean daily temperatures (°C) during soybean development from sowing date and “i” is the period of the development stage corresponding to sowing dates I, II, III.

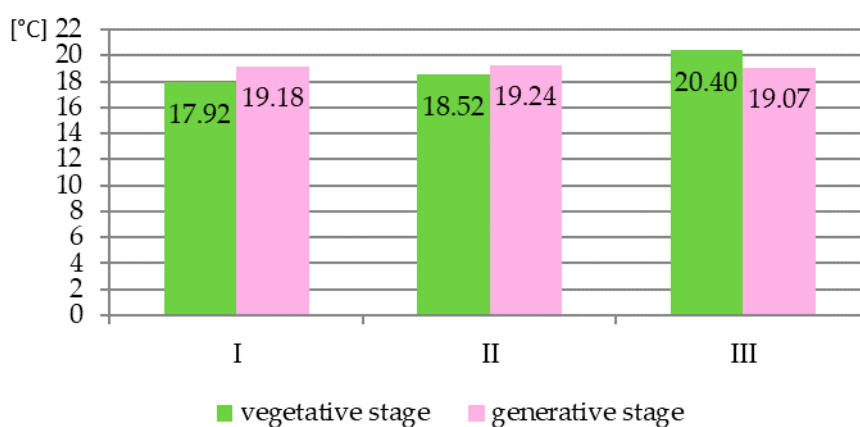


Figure S4. Effect of sowing date on mean daily temperature [°C] during vegetative and generative development of soybean (Sowing dates: I – the earliest, II – delayed 10 days in relation to the earliest date, III – delayed 20 days in relation to the earliest).

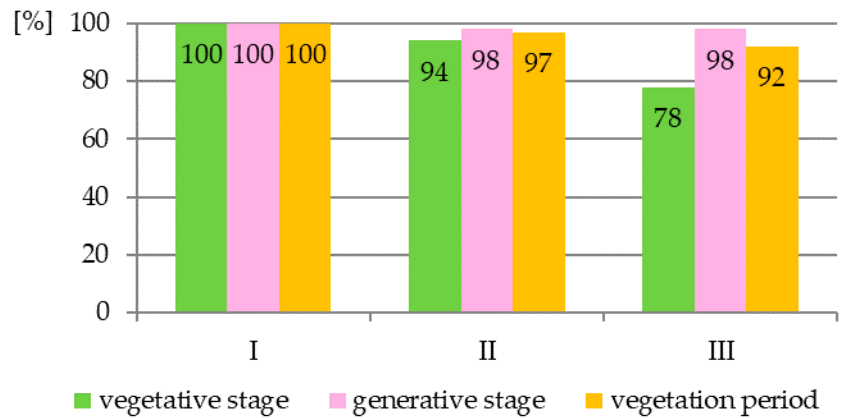


Figure S5. Sowing date and the relative length of development periods from emergence in reference to their length at the 1st sowing date (Sowing dates: I – the earliest, II – delayed 10 days in relation to the earliest date, III – delayed 20 days in relation to the earliest). The values shown in the figure can be described by the equation: $\%C_i = (C_i * 100) / C_1$; where C_i = number of days during soybean development from emergence date and “i” is the period of the development stage corresponding to sowing dates I, II, III.

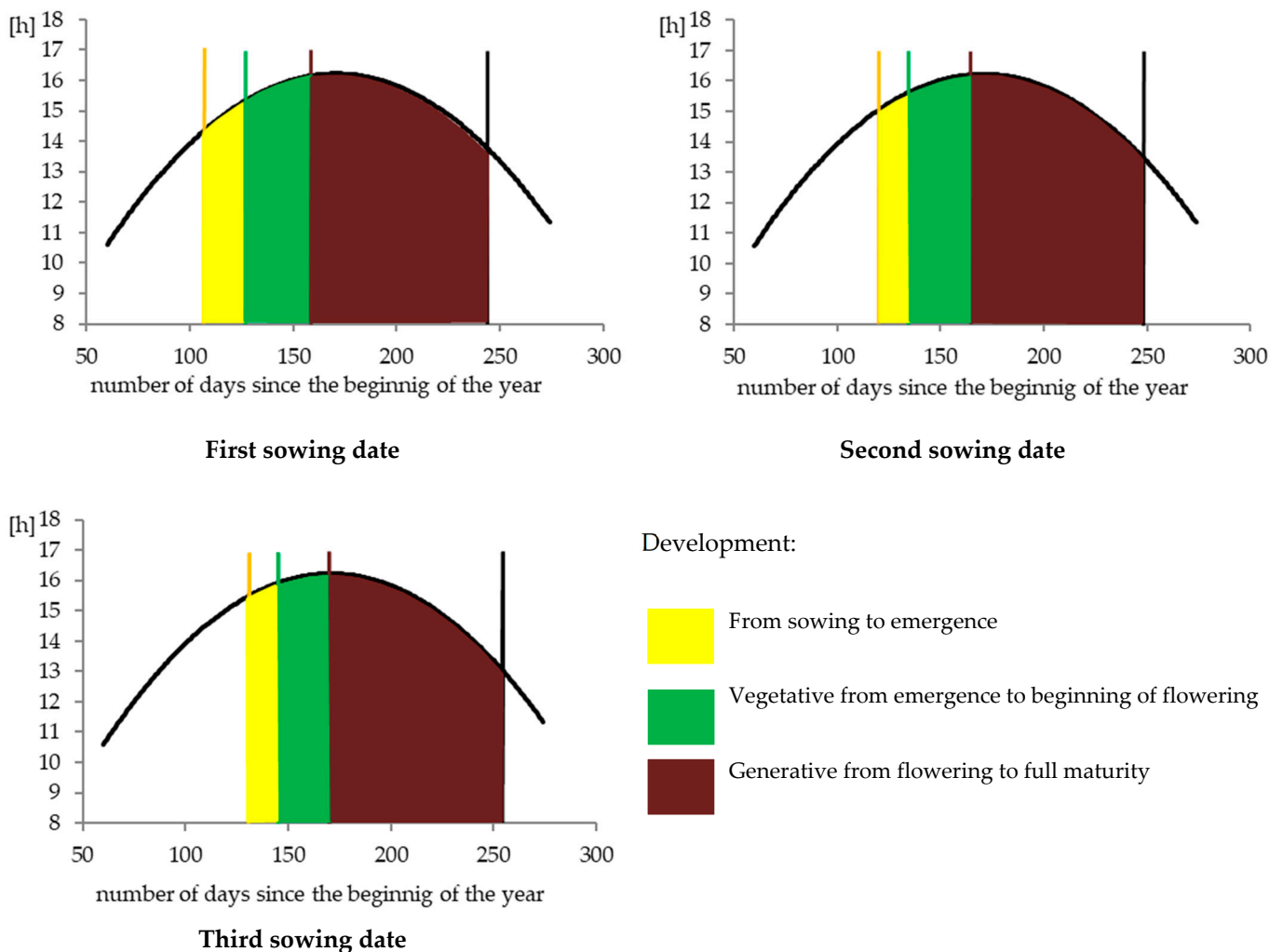


Figure S6. Influence of sowing date on the duration of growth stages in relation to changing day length on Wrocław latitude (51°10' N).

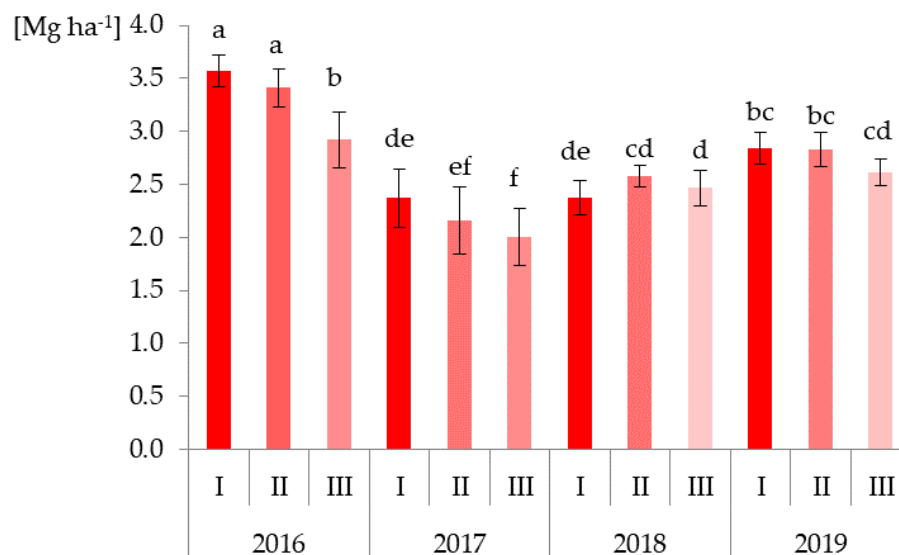


Figure S7. Effect of SxY interaction on soybean seed yields. 2016, 2017, 2018, 2019 – years of research; I, II, III - sowing dates: I – the earliest (16-21.04), II – delayed 10 days in relation to the earliest date (26.04-10.05), III – delayed 20 days in relation to the earliest (06-19.05). The vertical line atop each bar is SD for that mean. Different letters indicate a significant difference (Tukey's multiple range test).

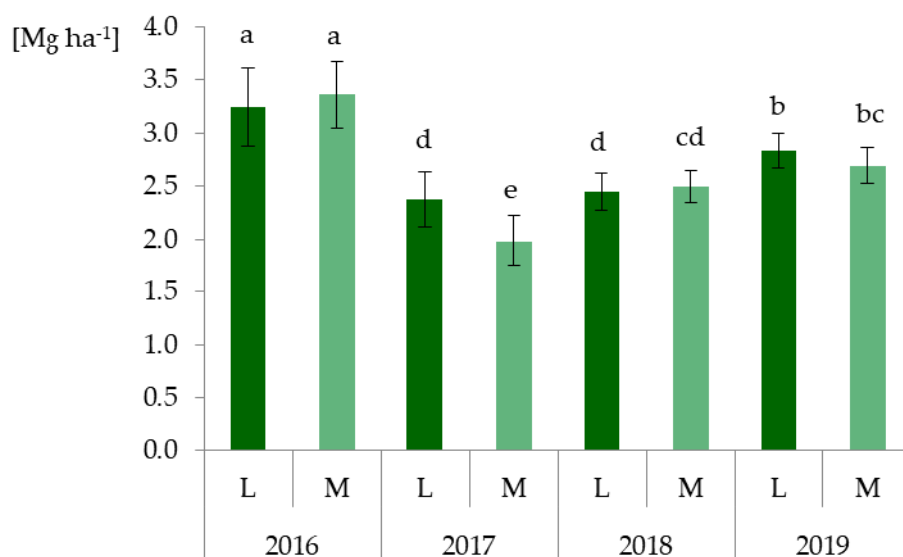


Figure S8. Effect of CxY interaction on soybean seed yields. 2016, 2017, 2018, 2019 – years of research; L – Lissabon cultivar, M – Merlin cultivar. The vertical line atop each bar is SD for that mean. Different letters indicate a significant difference (Tukey's multiple range test).