



Table S1. The effects of year (Y), seedbed (S), and forage (F) on sterile oat density, wild mustard density, and total weed density.

Factors	DF ¹	Sterile Oat	Wild Mustard	Total Weeds
Year (Y)	1	0.0192	0.0201	0.0008
Error (a) ²	3			
Seedbed (S)	2	0.0000	0.0000	0.0000
Y × S	2	0.0260	0.2534	0.0049
Error (b) ³	12			
Forage (F)	4	0.0000	0.0011	0.0000
S × F	8	0.0622	0.5075	0.0188
Y × F	4	0.9943	0.2856	0.5489
Y × S × F	8	0.6526	0.3519	0.3436
Error (c) ⁴	72			
Total	119			

¹ Degrees of Freedom.

² Error (a); Block * S.

³ Error (b); Block * F(S).

⁴ Error (c); Block * F(S) * Y.

Table S2. Full presentation of all statistic parameters for the second-degree polynomial relationships ($y = ax^2 + bx + c$, $n = 12$) between total weed density (no. m^{-2} ; y) and days until sowing (no.; x) for each forage in (a) 2020–2021 and (b) 2021–2022 ("no." is the abbreviation of "number").

¹ TWD = A * DUS ² + B * DUS + C in 2020–2021							
Forage	A	B	C	P-Value Model	R ²	² RMSE	³ MAE
BCM	−0.311224 (0.0952685)	2.1787 (1.38822)	45.0 (3.81153)	0.0004	0.787186	7.62306	5.5
ARBC 1	−0.295918 (0.0994789)	1.78571 (1.44957)	40.75 (3.97998)	0.0004	0.789365	7.95997	6.08333
ARBC 2	−0.153061 (0.139787)	0.142857 (2.03693)	33.5 (5.59265)	0.0155	0.516096	11.1853	6.5
ARBC 3	−0.0153061 (0.0863838)	−1.53571 (1.25876)	27.0 (3.45607)	0.0025	0.677968	6.91215	3.75
ARM	−0.0229592 (0.055069)	−1.55357 (0.802446)	28.5 (2.20322)	0.0001	0.862758	4.40643	2.95833
TWD = A * DUS ² + B * DUS + C in 2021–2022							
Forage	A	B	C	P-Value Model	R ²	RMSE	MAE
BCM	−0.0255102 (0.159107)	−2.21429 (2.31845)	64.5 (6.3656)	0.0100	0.560307	12.7312	9.33333
ARBC 1	−0.47449 (0.0753307)	2.82143 (1.09769)	64.5 (3.01386)	0.0000	0.946661	6.02771	4.5
ARBC 2	0.117347 (0.155424)	−5.10714 (2.26479)	55.5 (6.21825)	0.0012	0.724911	12.4365	8.66667
ARBC 3	0.0688776 (0.0719731)	−4.33929 (1.04877)	50.75 (2.87953)	0.0000	0.923898	5.75905	3.41667
ARM	−0.114796 (0.123472)	−1.05357 (1.7992)	42.75 (4.93992)	0.0015	0.712755	9.87983	7.5

¹ TWD; Total Weed Density, DUS; Days Until Sowing.

² RMSE; Root Mean Square.

³ MAE; Mean Absolute Error.

Table S3. The effects of years (Y), seedbed (S), and forage (F) on forage yield, biomass of berseem clover, and total weed biomass in the first harvest.

Factors	DF ¹	Forage Yield	Berseem Clover Biomass	Weed Biomass
Year (Y)	1	0.0008	0.0078	0.0007
Error (a) ²	3			
Seedbed (S)	2	0.0000	0.0000	0.0000
Y × S	2	0.0380	0.3113	0.0161
Error (b) ³	12			
Forage (F)	4	0.0000	0.0011	0.0000
S × F	8	0.5082	0.0000	0.0474
Y × F	4	0.1645	0.0000	0.0553
Y × S × F	8	0.3495	0.1067	0.8241
Error (c) ⁴	72			
Total	119			

¹ Degrees of Freedom.² Error (a); Block * S.³ Error (b); Block * F(S).⁴ Error (c); Block * F(S) * Y.

Table S4. Full presentation of all statistic parameters for the second-degree polynomial relationships ($y = ax^2 + bx + c$, $n = 12$) between forage yield (kg ha^{-1} ; y) and days until sowing (no.; x) for each forage in (a) 2020–2021 and (b) 2021–2022 ("no." is the abbreviation of "number").

FY = A * DUS ² + B * DUS + C in 2020–2021							
Forage	A	B	C	P-Value	R ²	RMSE	MAE
BCM	10.1054 (3.83797)	−68.7321 (57.0101)	6154.2 (149.908)	0.0011	0.733696	299.816	229.433
ARBC 1	−0.883631 (3.4011)	72.2226 (50.5207)	6392.42 (132.844)	0.0052	0.619433	265.688	203.508
ARBC 2	1.11622 (2.80988)	24.9943 (41.7387)	6820.5 (109.752)	0.0149	0.519988	219.503	169.767
ARBC 3	5.41726 (3.18812)	−8.07024 (47.3572)	7071.87 (124.526)	0.0009	0.742067	249.051	175.75
ARM	5.76823 (2.71467)	−18.1552 (40.3244)	6864.85 (106.033)	0.0004	0.779963	212.066	155.417
FY = A * DUS ² + B * DUS + C in 2021–2022							
Forage	A	B	C	P-Value	R ²	RMSE	MAE
BCM	2.29509 (4.4106)	48.667 (65.5161)	5225.92 (172.274)	0.0036	0.649415	344.549	236.325
ARBC 1	8.16473 (3.63014)	−18.6509 (53.923)	5183.48 (141.791)	0.0002	0.821093	283.581	198.375
ARBC 2	8.7744 (3.73819)	−55.1131 (55.5279)	5662.02 (146.011)	0.0016	0.707142	292.021	237.542
ARBC 3	9.51644 (3.60946)	−29.732 (53.6158)	5784.27 (140.983)	0.0001	0.847950	281.965	198.642
ARM	7.04449 (4.94244)	−36.7086 (73.4162)	5915.12 (193.048)	0.0181	0.498709	386.095	280.538

¹ TWD; Total Weed Density, DUS; Days Until Sowing.

² RMSE; Root Mean Square.

³ MAE; Mean Absolute Error.

Table S5. The effects of years (Y), seedbed (S), and forage (F) on forage yield, biomass of berseem clover, and total weed biomass in the second harvest.

Factors	DF ¹	Forage Yield	Berseem Clover Biomass	Weed Biomass
Year (Y)	1	0.6476	0.8026	0.6992
Error (a) ²	3			
Seedbed (S)	2	0.2673	0.9482	0.7776
Y × S	2	0.6271	0.9719	0.7443
Error (b) ³	12			
Forage (F)	4	0.0000	0.0000	0.0000
S × F	8	0.0329	0.1281	0.1989
Y × F	4	0.5759	0.2145	0.0553
Y × S × F	8	0.2677	0.1724	0.8241
Error (c) ⁴	72			
Total	119			

¹ Degrees of Freedom.² Error (a); Block * S.³ Error (b); Block * F(S).⁴ Error (c); Block * F(S) * Y.**Table S6.** The effects of years (Y), seedbed (S), and forage (F) on cumulative forage yield and biomass of berseem clover from two harvests.

Factors	DF ¹	Forage Yield	Berseem Clover Biomass
Year (Y)	1	0.0025	0.0110
Error (a) ²	3		
Seedbed (S)	2	0.0000	0.0000
Y × S	2	0.2438	0.4792
Error (b) ³	12		
Forage (F)	4	0.0000	0.0000
S × F	8	0.3849	0.0001
Y × F	4	0.3249	0.0000
Y × S × F	8	0.4372	0.0758
Error (c) ⁴	72		
Total	119		

¹ Degrees of Freedom.² Error (a); Block * S.³ Error (b); Block * F(S).⁴ Error (c); Block * F(S) * Y.