Table S1. Bayesian information criterion (BIC) and number of parameters (NP) for different structures of residual (R) and genetic (G) variance/covariance matrix in the multi-harvest model for dry matter yield (DMY), average height (AH) and percent blooming at harvest (BLOOM).

Matrix		DYM		AH		BLOOM	
R†	G†	NP	BIC	NP	BIC	NP	BIC
CS	CS	5	67881.3	5	23215	5	24708.7
DIAG	CS	15	67029.2	15	22859.6	12	24701.8
DIAG	CSH	25	67058.2	25	22903.7	19	24612.3
DIAG	US	79	67212.8	79	23182.3	46	24778.8
DIAG	FA1	N.C. ‡	N.C. ‡	31	22922.8	26	24649.6
DIAG	FA2	35	66871.6	36	22878.2	29	24603.6
DIAG	ARH (1)	25	**66852.8**	25	**22795.7**	19	**24551**

†CS = compound symmetry; CSH= compound symmetry heterogeneous; US= unstructured; DIAG= diagonal with heterogeneous variances for each cutting; ARH (1) autoregressive of order 1 heterogeneous; FA1, first-order factor analytic matrix; FA2, second-order factor analytic matrix. ‡ N.C.= did not converge.

Table S2. Variance components, likelihood test, narrow-sense heritability (h^2) and standard error (SE) of h^2 for dry matter yield (DMY). Variance of row (Vrow), Variance of column (Vcol), variance of family (Vfam), variance of error (Verror) in single harvest analysis for DMY across eleven harvests in alfalfa.

Harvest	Vrow	Vcol	Vfam	Verror	h^2	SE
1	336218.9*	214793.30*	671989.95*	596222.60	0.53	0.06
2	563586.51*	342247.60*	369681.05*	831800.40	0.31	0.07
3	196596.16*	62919.14*	371368.38*	430731.80	0.46	0.06
4	281497.07*	118652.50*	251842.05*	437606.40	0.37	0.06
5	65178.33*	24897.58*	105405.17*	273980.90	0.28	0.06
6	29203.50*	0.13 ns	110118.24*	319740.30	0.26	0.06
7	16970.99*	3658.89 ns	53604.28*	179534.80	0.23	0.06
8	4987.24ns	18291.56*	73524.27*	189547.80	0.28	0.06
9	77401.39*	15077.57 ns	140161.95*	381844.40	0.27	0.06
10	77639.86*	21610.63 ns	148078.81*	521297.60	0.22	0.06
11	71886.21*	85274.96*	146544.00*	809973.00	0.15	0.05

* and ns = significant and non-significant by the likelihood ratio test (LTR) at 5% probability, respectively.

Table S3. Variance components, likelihood test, narrow-sense heritability (h^2) and standard error (SE) of h^2 for average height (AH). Variance of row (Vrow), variance of column (Vcol), variance of family (Vfam), variance of error (Verror) in single harvest analysis for AH across eleven harvests in alfalfa.

Harvest	Vrow	Vcol	Vfam	Verror	h^2	SE
1	2.13 *	17.71 *	19.79 *	33.44	0.37	0.06
2	57.80 *	10.15 *	6.03 *	71.87	0.08	0.05
3	11.76 *	8.13 *	4.16 *	25.77	0.14	0.06
4	13.06 *	6.65 *	5.07 *	19.52	0.21	0.07
5	5.59 *	5.10 *	9.25 *	17.54	0.35	0.06
6	2.57 *	0.18 ns	9.60 *	27.21	0.26	0.06
7	4.88 *	0.00 ns	10.91 *	36.32	0.23	0.06
8	4.44 *	0.51 ns	6.23 *	32.49	0.16	0.06
9	6.68 *	0.00 ns	12.88 *	30.84	0.29	0.06
10	3.78 *	2.94 *	11.25 *	38.36	0.23	0.06
11	3.44 *	1.04 ns	8.54 *	49.28	0.15	0.05

* and ns = Significant and non-significant by the likelihood ratio test (LRT) at 5% probability, respectively.

Table S4. Variance components, likelihood test, narrow-sense heritability (h^2) and standard error (SE) of h^2 for percent blooming at harvest (BLOOM). Variance of row (Vrow), Variance of column (Vcol), variance of family (Vfam), variance of error (Verror) in single harvest analysis for BLOOM across eight harvests in alfalfa.

Harvest	Vrow	Vcol	Vfam	Verror	h^2	SE
1	8.48 ns	10.64 ns	265.76 *	256.79	0.51	0.06
2	28.53 *	15.40*	224.97 *	319.15	0.41	0.06
3	56.34 *	86.25 *	249.56 *	473.03	0.35	0.06
4	27.44 *	27.09 ns	255.05 *	478.48	0.35	0.06
5	51.37 *	2.96 ns	271.09 *	463.80	0.37	0.06
6	22.54 *	6.12 ns	168.71 *	318.77	0.35	0.06
7	56.26 *	8.83 ns	212.61 *	404.71	0.34	0.06
8	0.92 ns	0.00 ns	3.03 *	35.14	0.08	0.04

* and ns = Significant and non-significant by the likelihood ratio test (LRT) at 5% probability, respectively.