

# Big Data and Machine Learning to Improve European Grapevine Moth (*Lobesia botrana*) Predictions

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## SUPPORTING INFORMATION

**Table S1.** Parameters recorded daily every 30 minutes by the weather stations used in the modeling.

Parameter	Measurement unit
Temperature	°C
Relative humidity	%
Wind speed	m/s
Wind direction	°
Solar radiation	W/m <sup>2</sup>
Accumulated precipitation	mm

**Table S2.** List of SiAR weather stations used for modeling.

Code	Longitude	Latitude	Altitude
Z01	-1.329722	41.451944	395
Z05	-1.281944	41.583056	327
Z14	-1.507500	41.855000	376
Z15	-1.745833	41.916111	521
Z18	-1.424444	41.108056	747
Z22	-1.249444	41.843056	226
Z24	-1.614620	41.362900	523

**Table S3.** Stages of development and sum of cumulative temperatures required according to the Touzeau model.

Stage	Temperature Sum (Tou)	Accumulated Temperature Sum (Tou)
Maximum flight 1 <sup>st</sup> Generation	125	125
Egg eclosion 1 <sup>st</sup> Generation	75	200
Larval development	170	370
Pupal formation and adult appearance of 2 <sup>nd</sup> Generation	130	500
Egg eclosion 2 <sup>nd</sup> Generation	65	565
Larval development	255	820
Chrysalis formation and adult appearance of 3 <sup>rd</sup> Generation	130	950
Egg eclosion 3 <sup>rd</sup> Generation	75	1025

**Table S4.** Monitoring sites used for validation of the Touzeau model.

<b>Code</b>	<b>Altitude (m)</b>	<b>Latitude</b>	<b>Longitude</b>
50004A03400175	671	41.34436	-1.28833
50024A00300013	435	41.43628	-1.30584
50073A00700043	530	41.38521	-1.19748
50073A01000009	632	41.35815	-1.16129
50073A02700014	626	41.33168	-1.24124
50073A03400128	556	41.37100	-1.24282
50073A03500094	493	41.40490	-1.23058
50073A04100021	517	41.39011	-1.20791
50073A04800016	582	41.36016	-1.18331
50073A05800042	664	41.32108	-1.17023
50073A08400031	565	41.35638	-1.20710
50073A08900011	616	41.33819	-1.18215
50073A09500073	613	41.32603	-1.20547
50073A10000051	595	41.33764	-1.21614
50098A03000027	719	41.29084	-1.25558
50201A00200124	702	41.29448	-1.22502
50201A02200012	716	41.28343	-1.20595
50268A00100050	657	41.34200	-1.13889

**Table S5.** Monitoring sites used for validation of the ML models.

<b>Code</b>	<b>Altitude (m)</b>	<b>Latitude</b>	<b>Longitude</b>
50002A00400047	860	41.17790	-1.60215
50006A03800131	571	41.76361	-1.54832
50046A01700135	669	41.31718	-1.52381
50055A02700794	400	41.85982	-1.52577
50055A05900072	515	41.81587	-1.58083
50061A00700009	434	41.80252	-1.49993
50073A01000013	613	41.35465	-1.16592
50073A04800016	582	41.36016	-1.18331
50073A07600105	556	41.35884	-1.23050
50088A00400051	528	41.39414	-1.27336
50088A02900241	578	41.37768	-1.26875
50144A50100067	588	41.38704	-1.13643
50252A03500186	730	41.68100	-1.52724
50252A03500186	730	41.68100	-1.52724
50252A03500186	730	41.68100	-1.52724
50284A01000052	635	41.25696	-1.60230
50284A01000052	635	41.25696	-1.60230
50295A03000033	638	41.36349	-1.08042