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https://doi.org/10.20870/oeno-one.2026.60.3.9963

SUPPLEMENTARY DATA

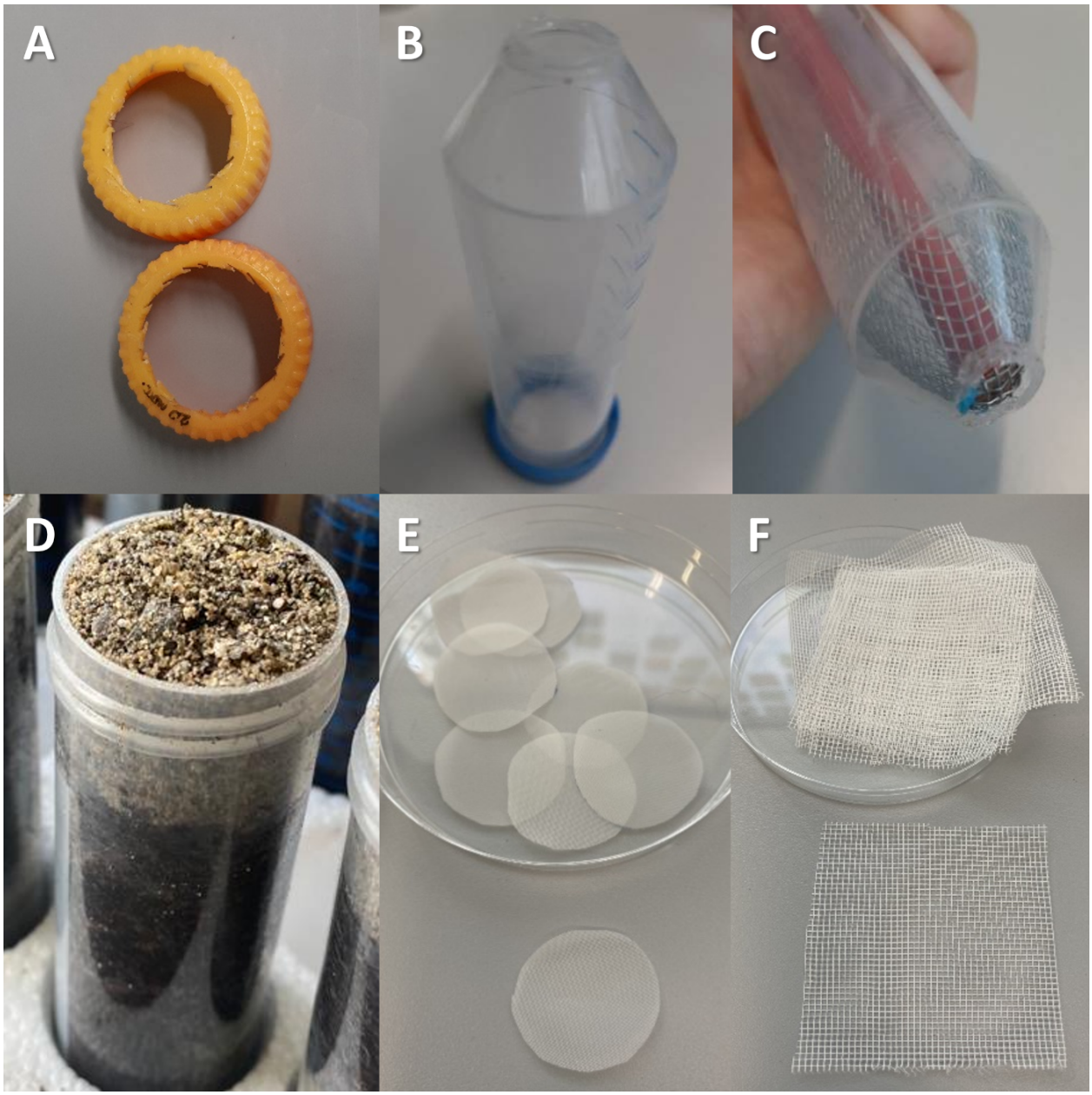


Figure S1. Components of the plastic tubes for the overwintering setup.

(A) Perforated caps; (B) Cut conical tube base; (C) Metal mesh placed at the base of the conical tube; (D) Tube filled with soil and topped with a sand layer; (E) Nylon mesh discs supporting leaf fragment; (F) Insect-proof net covering the leaf fragments.

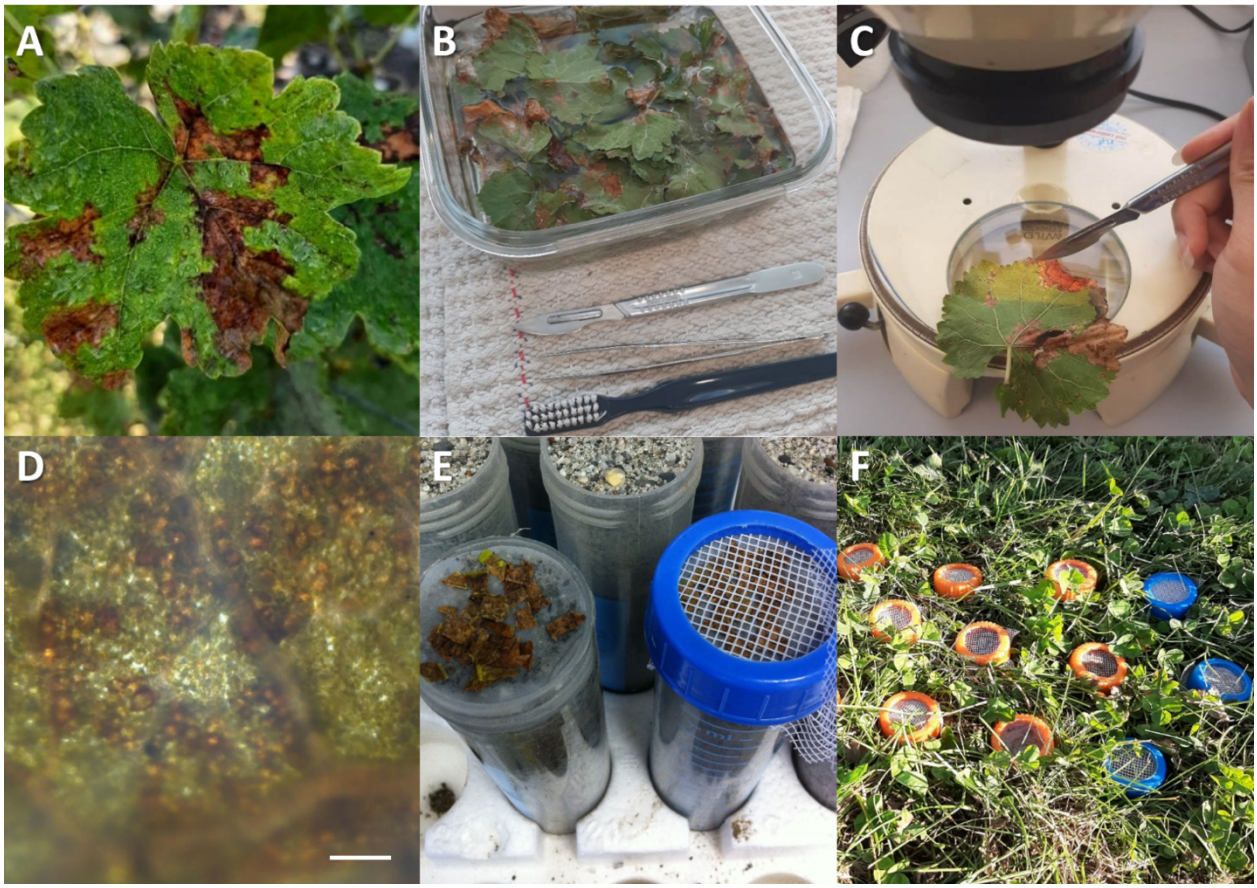


Figure S2. Preparation of grapevine leaf fragments.

(A) Young Chasselas' leaf with mosaic downy mildew containing oospores; (B) Collected leaves soaked in cold water before cleaning and cutting; (C) Abaxial leaf face lesion observed under a stereomicroscope (bottom illumination); (D) Oospores observed under a stereomicroscope at 40 × magnification (scale bar = 0.2 mm); (E) Tube containing 25 leaf fragments full of the oospores; (F) Tubes containing oospores inserted into the soil for overwintering, placed beneath the vine row, between two grapevine plants.

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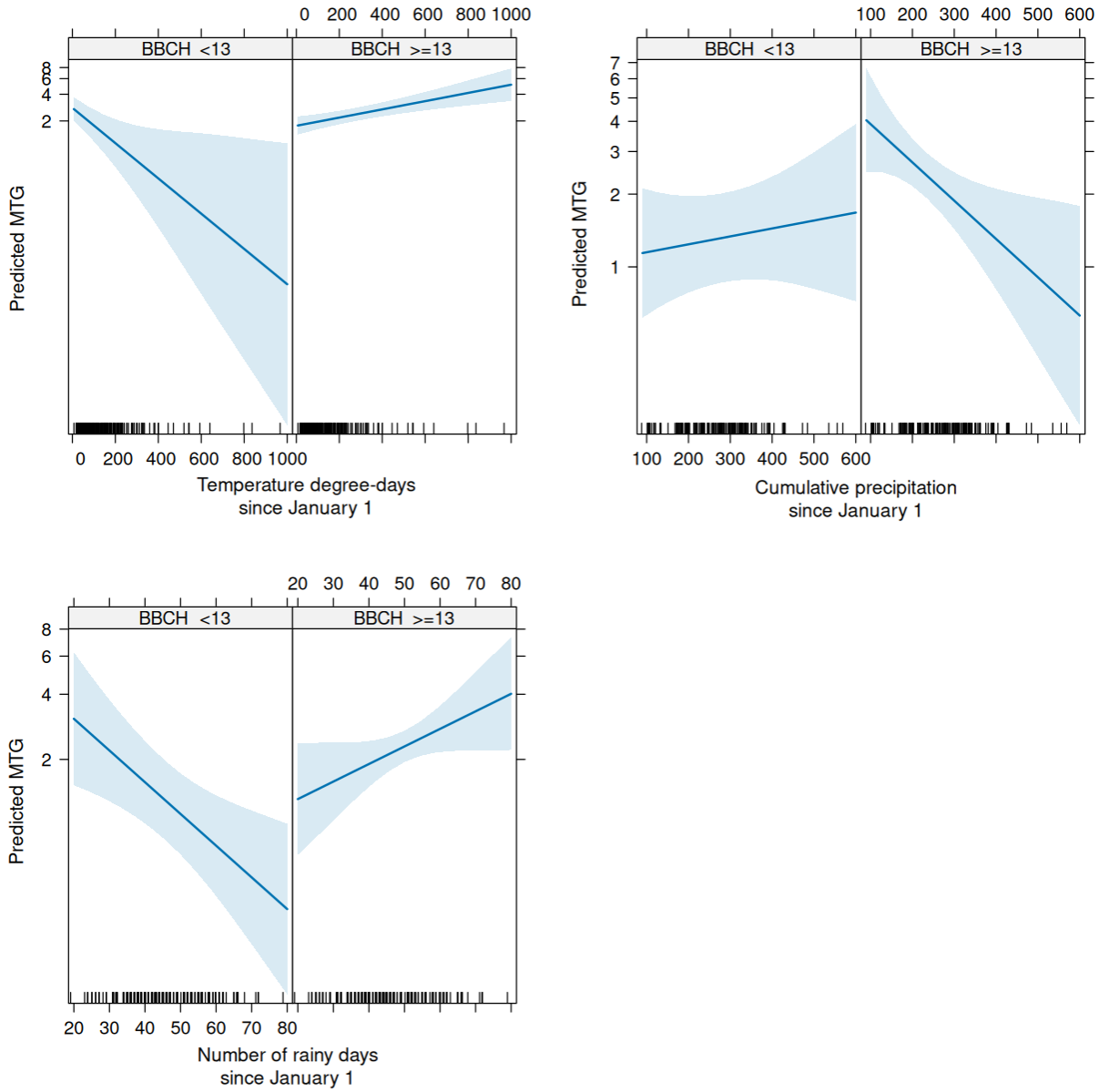


Figure S3. Marginal plot effects from the generalised linear model describing the influence of climatic variables on the minimal time to germination (MTG) including the interactions with the BBCH categories (<13 or >=13).

Blue lines represent the model-predicted MTG, holding other predictors constant at their mean values, with 95 % confidence intervals shown in shaded areas.

SUPPLEMENTARY DATA
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Table S1. Calendar of Julian day comparison of observed and predicted oospore maturity and primary infection (2004–2025).

Year	Oospore maturity			Primary infection		
	Observed	Temperature degree-days (based 8°C) > 140 °C	Predicted by GLM	Observed day	Predicted day by actual VitiMeteo-Plasmopara	Predicted day by VM-Plasmopara with GLM-based oospore maturity
2025	97	116	117	132	123	123
2024	85	106	96	127	119	119
2023	88	124	116	121	129	119
2021	123	130	130	136	136	136
2020	128	109	116	159	121	121
2019	113	133	124	171	145	128
2018	121	115	108	135	129	129
2017	128	105	127	133	115	131
2016	110	130	109	121	132	114
2015	124	121	118	124	123	121
2014	129	113	112	117	117	117
2013	115	130	119	129	137	122
2012	116	121	120	123	123	122
2010	102	120	121	122	122	122
2009	131	120	123	135	147	147
2008	98	132	123	137	137	137
2007	120	112	116	137	120	120
2006	131	127	129	133	128	133
2005	122	123	132	143	134	134
2004	106	136	131	153	153	153

SUPPLEMENTARY DATA
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Table S2. Differences in Julian days between observed and predicted dates for oospore maturity and primary infection (2004–2025) using the Vitimeteo-Plasmopara (VM) model.

Year	Δ oospore maturity days			Δ primary infection days		
	Observed – TDD > 140 °C	Observed – GLM-based	GLM-based – TDD > 140 °C	Observed – VM based on TDD > 140 °C	Observed – VM based on GLM	VM based on TDD > 140 °C – VM based on GLM
2025	-19	-20	1	9	9	0
2024	-21	-11	-10	8	8	0
2023	-36	-28	-8	-8	2	10
2021	-7	-7	0	0	0	0
2020	19	12	7	38	38	0
2019	-20	-11	-9	26	43	17
2018	6	13	-7	6	6	0
2017	23	1	22	18	2	-16
2016	-20	1	-21	-11	7	18
2015	3	6	-3	1	3	2
2014	16	17	-1	0	0	0
2013	-15	-4	-11	-8	7	15
2012	-5	-4	-1	0	1	1
2010	-18	-19	1	0	0	0
2009	11	8	3	-12	-12	0
2008	-34	-25	-9	0	0	0
2007	8	4	4	17	17	0
2006	4	2	2	5	0	-5
2005	-1	-10	9	9	9	0
2004	-30	-25	-5	0	0	0

Colours indicate timing classes: green (good timing), red (missed primary infection), light orange (moderate anticipation), and dark orange (excessive anticipation).