

Additional file 1: Fundamental deterministic models used in plant pathology.

Name	Model	Citation
Mono molecular model	$\lambda(1-y_t)$	[101]
Gompertz model	$\lambda y_t \ln \frac{1}{y_t}$	[102]
Weibull model	$\frac{\lambda}{\beta} \left(\frac{\tau - \alpha}{\beta} \right)^{\beta - 1} \exp \left[- \left(\frac{\tau - \alpha}{\beta} \right)^{\beta} \right]$	[103]
Fundamental logistic model	$\lambda y_t (1 - y_t)$	[104]
Generalized model	$R(y_{\tau-p} - y_{\tau-p-i})(1 - y_t)$	[105]

Vanderplank's model assumes that latent period (p) has an effect on disease and that infected tissue duration (i) is infinite. Generalized model includes P , i and R as a corrected infection rate. In cases of such systemic infections or when a pathogen itself is transported by environmental factors, the corrected infection rate is assumed as in Vanderplank's original logistic model, since P can be assumed as 0 and i as infinite. Several logistic models have been derived from Vanderplank, generalized and monomolecular models, such Gompertz and Weibull models.