

Appendix S2 : Distribution Analysis

1. Probability distributions

1.1. Gamma, Erlang and exponential distributions

- The Gamma distribution is a two-parameter continuous-variable probability distribution with density function:

$$f(x, k, \lambda) = \frac{\lambda^k x^{k-1}}{\Gamma(k)} e^{-\lambda x} \quad (\text{s.1})$$

For $x \geq 0$, $k > 0$ (shape parameter), and $\lambda > 0$ (rate parameter), and where $\Gamma()$ is the gamma function

- The Erlang distribution is a particular case of the Gamma distribution when the shape parameter k is an integer. The *pdf* of the Erlang distribution is:

$$f(x, k, \lambda) = \frac{\lambda^k x^{k-1}}{(k-1)!} e^{-\lambda x} \quad (\text{s.2})$$

For $x \geq 0$, $\lambda > 0$, and k a positive integer.

- The exponential distribution is an Erlang distribution with shape parameter $k=1$; it has *pdf*:

$$f(x, \lambda) = \lambda e^{-\lambda x} \quad (\text{s.3})$$

1.2. Weibull distribution

The Weibull distribution is a two-parameter continuous-variable probability distribution with *pdf*:

$$f(x, k, \lambda) = \lambda k (\lambda x)^{k-1} e^{-(\lambda x)^k} \quad (\text{s.4})$$

For $x \geq 0$, $k > 0$ (shape parameter) and $\lambda > 0$ (rate parameter).

1.3. Lognormal distribution

The Lognormal distribution is a two-parameter probability distribution of a continuous random variable whose logarithm is normally distributed. The *pdf* of a log-normal distribution is:

$$f(x, \mu, \sigma) = \frac{1}{x\sigma\sqrt{2\pi}} e^{-\frac{(\ln(x)-\mu)^2}{2\sigma^2}} \quad (\text{s.5})$$

For $x \geq 0$, and where μ and σ are the mean and standard deviation of the logarithm of x .

2. Age-by-age fitted probability density functions (*pdf*): Figure S.1

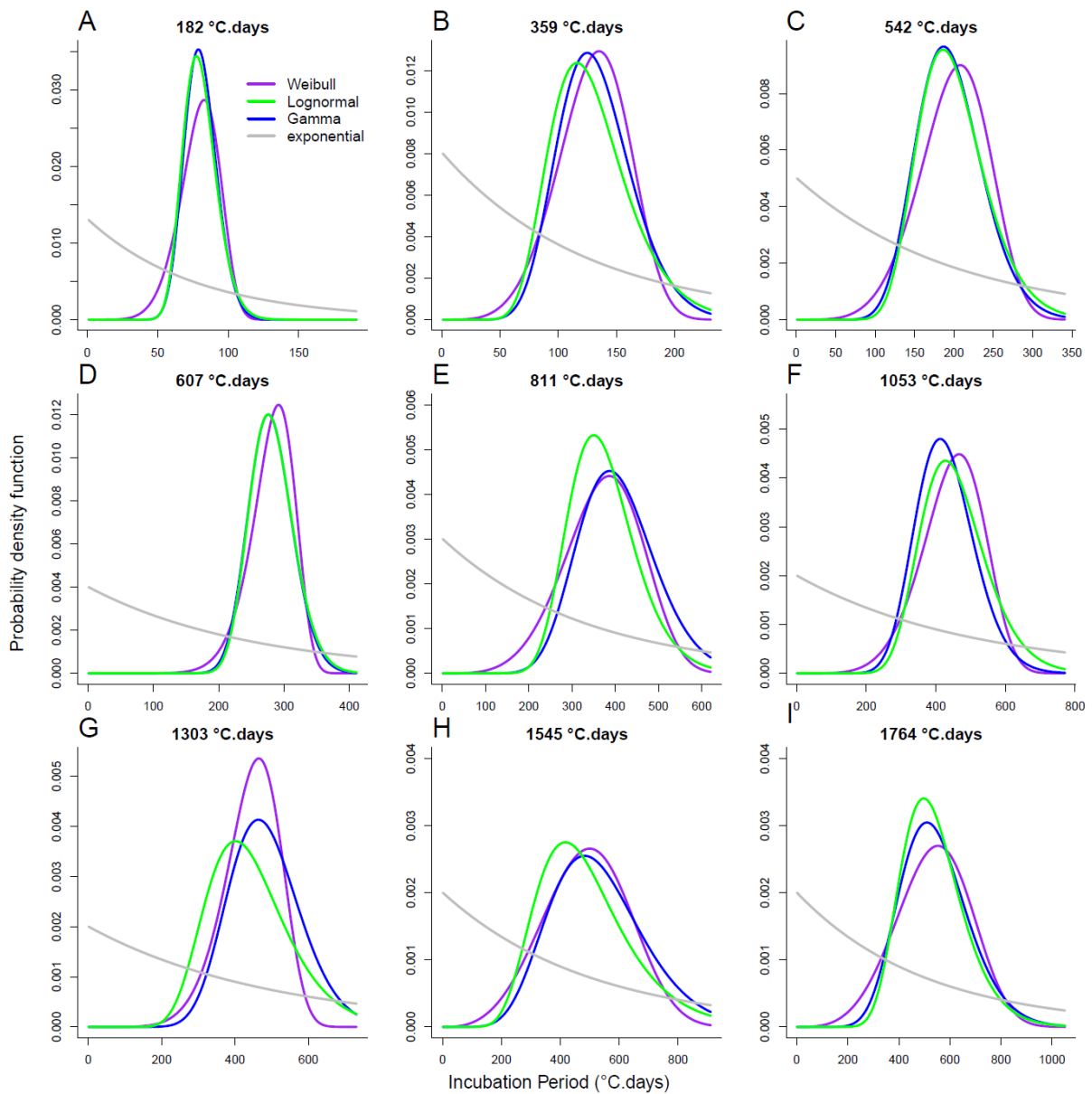


Figure S.1 Probability density functions of the distribution models fitted to the incubation period data by host age: Gamma (blue line) Lognormal (green), Weibull (purple) and exponential (grey). Age of host plants at inoculation: (A) 18 days (182 °C.days), (B) 32 days (359 °C.days), (C) 46 days (542 °C.days), (D) 60 days (607 °C.days), (E) 74 days (811 °C.days), (F) 88 days (1053 °C.days), (G) 102 days (1303 °C.days), (H) 116 days (1545 °C.days) ,and (I) 130 days (1764 °C.days).