**Supplementary Information**

*Data exclusion and model validation*

Three trays that became waterlogged during the experiment were excluded from all analyses. We checked that the random effects of the mixed effects Cox proportional hazards models were normally distributed. Specific random effects were included if models converged, and variances were non-zero (>10-4). We also validated the proportional hazards assumption of coxme by confirming that the Schoenfeld residuals were statistically independent of time. We estimated the ‘dfbeta’ values for each data point to identify the points that were the most influential in the estimation of each parameter. All outliers were then excluded from the analyses, and results were compared to the main analyses to ensure that the outliers did not disproportionately influence parameter estimates. We included all outliers in the final analyses.

We fitted both models (used in the survival analyses in the main section) using generalized mixed effects models (all species, **Table S2**) with the glmer function from the package lme4 ([Bates et al. 2015](#_30j0zll)) in R 3.4.0 to additionally verify results of the mixed effects Cox proportional hazards analyses (all species, **Table S2**). Using a fixed and random effects structure like that used in the survival analyses, we used a binomial transformation with a ‘logit’ link to first model overall germination and subsequent mortality (final status in 0s and 1s) across the entire period of observation. We also modelled the germination of each species separately to ensure that overall patterns were not driven by a single species. We then used a binomial transformation with a “complementary log-log” link to model germination and mortality in each of five census intervals that constituted the entire observation period and included the census number as an additional random effect. We contrasted effects in the control and fungicide treatments in both analyses to investigate whether effects in the two treatments were significantly different. We ensured that random effects were normally distributed and excluded any that had near zero (<10-4) variances. We used the standard diagnostic tools for generalized linear models to check whether all model assumptions were valid.

The results of each analysis of germination and mortality (**Table S1**) were similar to the results of the Cox proportional hazards model, suggesting that our results are robust to decisions about modelling methodology.

*Relationship between fragment size and Syzygium rubicundum density*

One possible explanation for the relationship between fungal-associated mortality of *Syzygium rubicundum* and fragment size, is higher densities of *S. rubicundum* in large fragments. We used information from 6 – 24 1 m2 seed traps and 15 – 60 1 m2 seedling plots that were set up in each fragment (for another experiment) to develop a measure of conspecific density in each fragment. We also recorded identities of adult trees above seed traps, monitored seed rain at regular intervals, and monitored seedling establishment in the plots.

Assuming similar disperser assemblages throughout the small study site, the proportion of seed traps with *S. rubicundum* seeds may serve as a reasonable substitute for the density of adult trees in each fragment. We monitored each seed trap on three occasions during the species’ fruiting period (April-May) and calculated the proportion of trap-cycles in each fragment when the species was detected. This index of density was not correlated with fragment size(Pearson’s r **=** 0.084**,** n = 21**,** p = 0.72). We also examined if *S. rubicundum* adult occurrence in the vicinity of seed traps, and *S. rubicundum* seedling numbers within seedling plots were correlated with fragment size. Neither of these measures of tree species density was correlated with fragment size (r = 0.0002 and 0.070**,** p = 0.95 and 0.23). Soil pathogens are likely to be associated with overall adult densities, not just fruiting adults. Although we do not have data on non-fruiting adult densities from the 21 fragments, overall adult densities in fragments were correlated (r = 0.62, p = 0.098) with fruiting adult densities in 20 x 20 m plots set up in eight fragments at the same site.

Overall, it appears that *S. rubicundum* densities were not correlated with fragment size in this study. The effect of fragment size on *S. rubicundum* seedling mortality observed in the experiment is therefore unlikely to have been caused by an underlying positive correlation between conspecific density and fragment size.

**Fig. S1**: Map showing the location of the study site and the layout of fragments. Forest fragments are separated by cultivated tea, grassland and roads. Adapted from a map created by Nature Conservation Foundation (NCF).