Table S1. Annual average emission rates of $CO_2ff$ at Vector and Ballance plants.

| Year (Sept-Apr) | Vector (gC s$^{-1}$) | Ballance (gC s$^{-1}$) | Total (gC s$^{-1}$) |
|---|---|---|---|
| 2004 | 5328 | 1576 | 6904 |
| 2005 | 5711 | 1601 | 7312 |
| 2006 | 5714 | 1728 | 7441 |
| 2007 | 4611 | 1627 | 6238 |
| 2008 | 4968 | 1355 | 6323 |
| 2009 | 5654 | 1642 | 7296 |
| 2010 | 5436 | 1683 | 7119 |
| 2011 | 5300 | 884 | 6184 |
| Mean | 5340 | 1512 | 6852 |
| Standard Deviation | 388 (7.3%) | 88 (18%) | 525 (7.7%) |
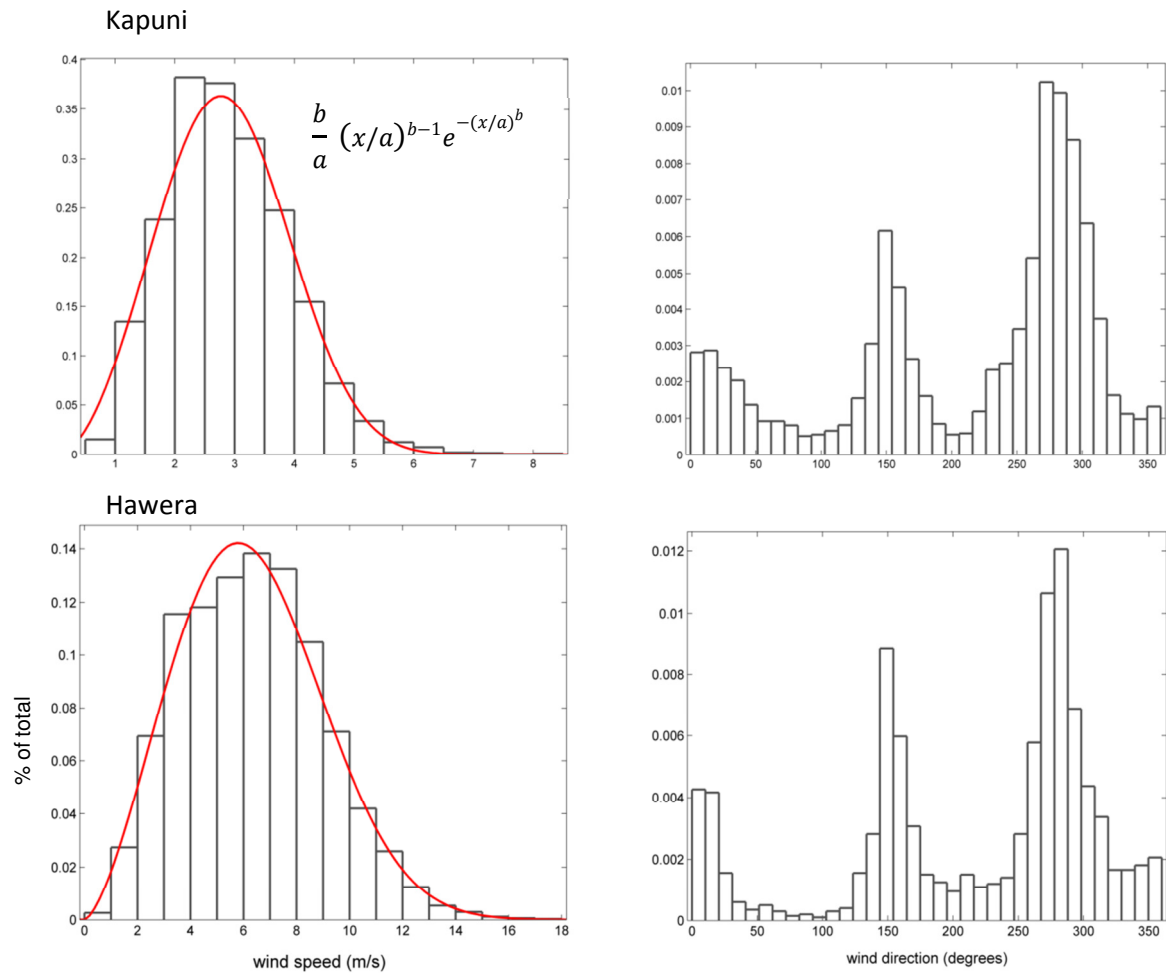
Figure S1. Wind speed (left) and direction (right) histograms and fitted Weibull probability distribution function (PDF) for (top) Kapuni 2013 (a = 3.19 b = 2.95; mean = 2.85 median = 2.7) and (bottom) all 8 years 2004-2011 at Hawera (Mean = 6.31 median = 6.2 std = 2.7 (43%)). Top left panel shows the equation of the Weibull PDF.
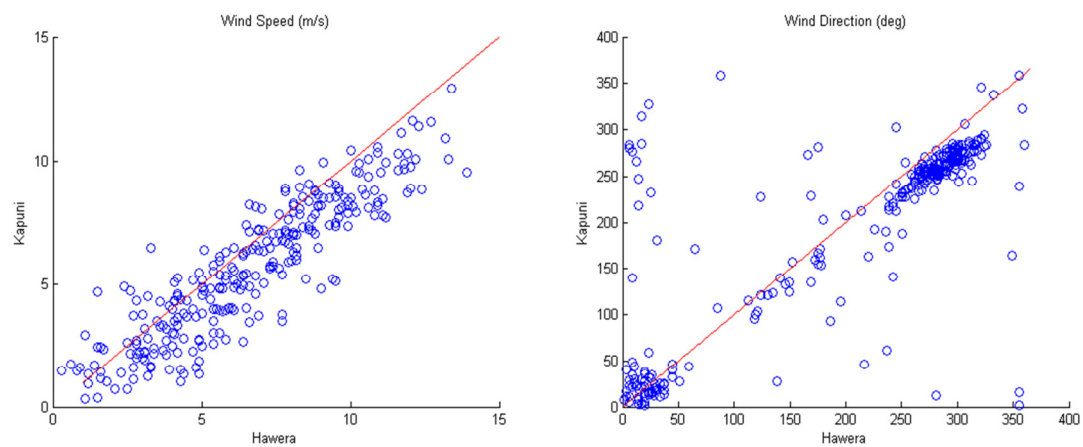
Figure S2. Wind speed (left) and wind direction (right) compared at each corresponding hourly time step at Kapuni and Hawera. Data from both sites spans 14 August - 26 October 2012.
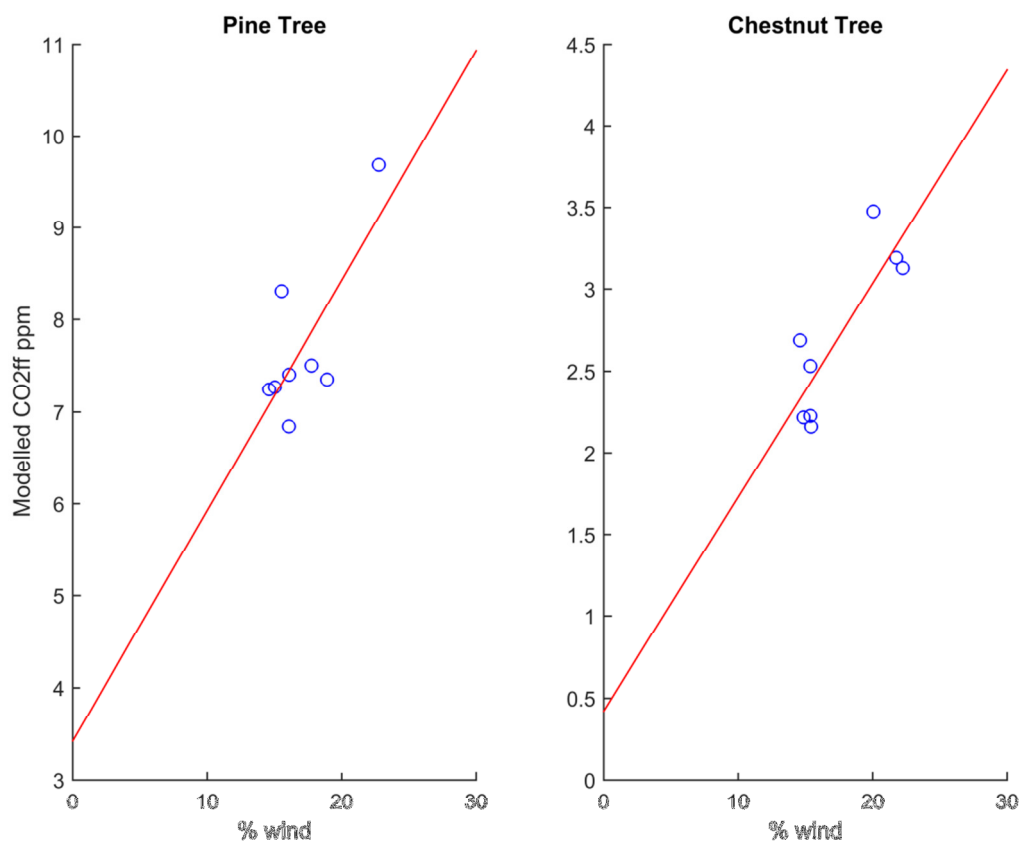
Figure S3. Correlation between % of northerlies in each year and modelled $CO_2$ff (constant emissions) at the locations of the pine and chestnut trees. $R^2 = 0.56$ (pine) and 0.72 (chestnut). Red line is a linear regression fit of the data.