

**Table S1.** Free aroma compounds detected in Cortese wines, vintages 2015 and 2016, produced from cv. Cortese control and treated grapes.

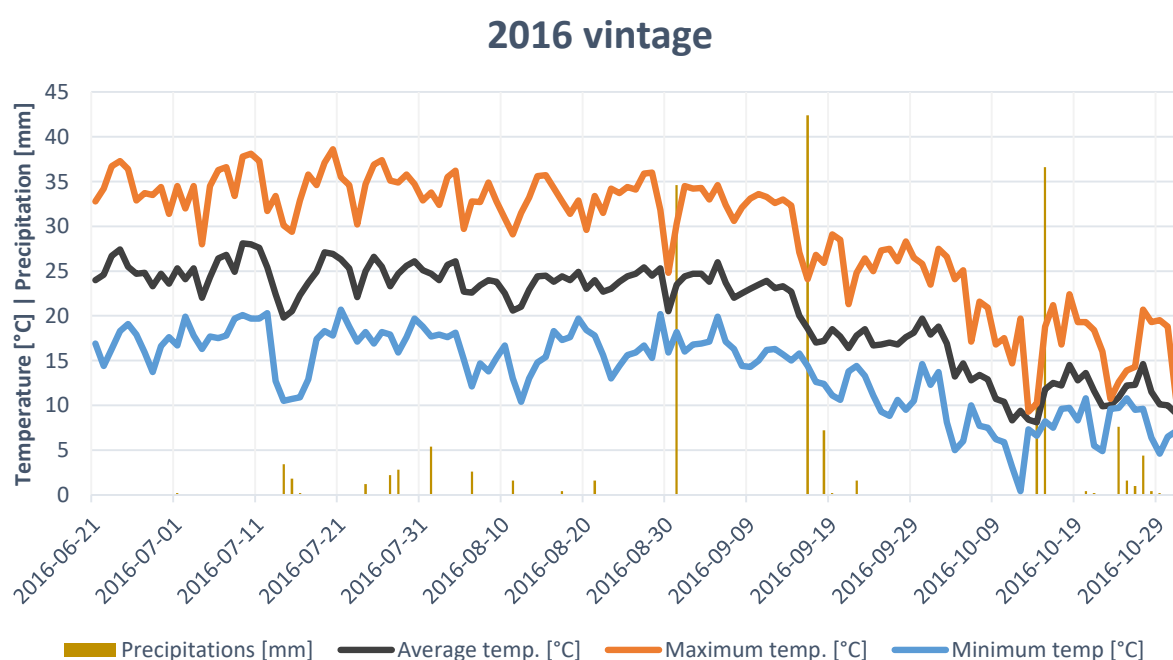
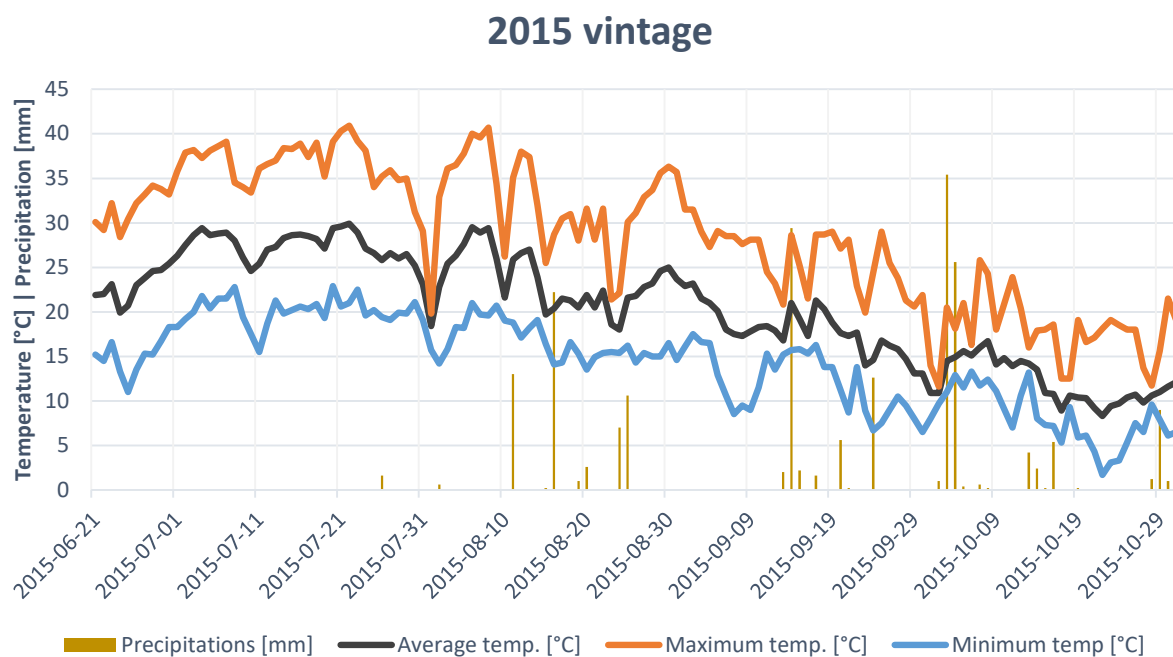
| Target compound            | Cortese, 2015 vintage |              |       | Cortese, 2016 vintage |              |       |
|----------------------------|-----------------------|--------------|-------|-----------------------|--------------|-------|
|                            | Control               | Treated      | Sign. | Control               | Treated      | Sign. |
| Isobutyric acid            | nd                    | nd           |       | 36 ± 4                | 36 ± 2       | ns    |
| Hexanoic acid              | 4873 ± 579            | 4886 ± 366   | ns    | 3056 ± 128            | 3338 ± 90    | ns    |
| Octanoic acid              | 6409 ± 2              | 6362 ± 16    | ns    | 3425 ± 136            | 3553 ± 90    | ns    |
| Decanoic acid              | nd                    | nd           |       | 685 ± 81              | 772 ± 10     | ns    |
| 9-decenoic acid            | nd                    | nd           |       | 114 ± 4               | 95 ± 1       | ns    |
| Butyric acid               | nd                    | nd           |       | 28 ± 5                | 31 ± 2       | ns    |
| 2-furoic acid              | nd                    | nd           |       | 19 ± 1                | 16 ± 1       | ns    |
| Isovaleric acid            | nd                    | nd           |       | 357 ± 11              | 365 ± 32     | ns    |
| Isobutanol                 | nd                    | nd           |       | 200 ± 2               | 181 ± 5      | ns    |
| 3-penten-2-ol              | 50 ± 1                | 54 ± 1       | *     | nd                    | nd           |       |
| 3-penten-ol                | nd                    | nd           |       | 53 ± 3                | 51 ± 1       | ns    |
| Isoamyl alcohol            | 4946 ± 2632           | 8000 ± 5882  | ns    | 29335 ± 435           | 30309 ± 3216 | ns    |
| 1-pentanol                 | nd                    | nd           |       | 12 ± 1                | 12 ± 1       | ns    |
| 2-hexanol                  | nd                    | nd           |       | 40 ± 1                | 42 ± 1       | ns    |
| 4-methyl-2-pentanol        | 110 ± 2               | 118 ± 1      | ns    | nd                    | nd           |       |
| 4-methylpentan-1-ol        | nd                    | nd           |       | 66 ± 1                | 66 ± 1       | ns    |
| 3-methyl-1-pentanol        | 181 ± 24              | 163 ± 18     | ns    | nd                    | nd           |       |
| Hexanol                    | 1372 ± 47             | 1319 ± 59    | ns    | 1404 ± 21             | 1458 ± 18    | ns    |
| <i>cis</i> -3-hexen-1-ol   | 60 ± 19               | 63 ± 20      | ns    | 151 ± 1               | 206 ± 9      | ns    |
| <i>trans</i> -3-hexenol    | nd                    | nd           |       | 10 ± 1                | 14 ± 1       | ns    |
| 3-ethoxypropanol           | nd                    | nd           |       | 23 ± 1                | 24 ± 1       | ns    |
| 2-butoxyethanol            | nd                    | nd           |       | 10 ± 1                | 9 ± 1        | ns    |
| Octanol                    | nd                    | nd           |       | 3 ± 1                 | 4 ± 1        | ns    |
| Methionol                  | nd                    | nd           |       | 40 ± 5                | 54 ± 14      | ns    |
| Guaiacol                   | nd                    | nd           |       | 20 ± 1                | 22 ± 1       | ns    |
| 2-phenylethanol            | 21013 ± 2546          | 21671 ± 7681 | ns    | 40932 ± 1478          | 42643 ± 2755 | ns    |
| 4-vinil guaiacol           | 148 ± 18              | 149 ± 7      | ns    | 481 ± 17              | 529 ± 7      | ns    |
| 4-vinylphenol              | nd                    | nd           |       | 321 ± 8               | 264 ± 11     | *     |
| 4-ethylguaiacol            | nd                    | nd           |       | nd                    | nd           |       |
| 4-ethylphenol              | nd                    | nd           |       | nd                    | nd           |       |
| Ethyl 3-methyl-butanoate   | nd                    | nd           |       | nd                    | nd           |       |
| Ethyl 2-methylbutanoate    | nd                    | nd           |       | 17 ± 1                | 12 ± 1       | ns    |
| Ethyl isovalerate          | nd                    | nd           |       | 23 ± 1                | 17 ± 1       | ns    |
| Isoamyl acetate            | 856 ± 3               | 1042 ± 11    | *     | 392 ± 20              | 437 ± 15     | ns    |
| Ethyl hexanoate            | 773 ± 22              | 781 ± 13     | ns    | 366 ± 17              | 406 ± 13     | ns    |
| Hexyl acetate              | 56 ± 31               | 93 ± 1       | ns    | 17 ± 1                | 27 ± 1       | ns    |
| Ethyl lactate              | nd                    | nd           |       | 1130 ± 68             | 1006 ± 142   | ns    |
| Ethyl-2-hydroxyisovalerate | nd                    | nd           |       | 16 ± 1                | 11 ± 1       | *     |
| Ethyl octanoate            | 1450 ± 46             | 1360 ± 3     | ns    | 185 ± 6               | 196 ± 4      | ns    |
| Ethyl-3-hydroxybutyrate    | nd                    | nd           |       | 22 ± 1                | 22 ± 1       | ns    |
| Ethyl-2-hydroxyhexanoate   | nd                    | nd           |       | 116 ± 1               | 91 ± 1       | **    |
| Isoamyl lactate            | nd                    | nd           |       | 40 ± 1                | 28 ± 1       | *     |
| Ethyl decanoate            | 394 ± 20              | 330 ± 9      | ns    | 40 ± 1                | 48 ± 2       | ns    |
| Diethyl succinate          | 2157 ± 196            | 1884 ± 65    | ns    | 3918 ± 105            | 2705 ± 9     | *     |
| Ethyl-4-hydroxybutanoate   | nd                    | nd           |       | 142 ± 9               | 180 ± 16     | ns    |
| Ethyl 9-decenoate          | 15 ± 1                | 21 ± 12      | ns    | nd                    | nd           |       |
| 2-phenylethyl acetate      | 425 ± 14              | 487 ± 8      | *     | 269 ± 7               | 320 ± 4      | *     |
| Ethyl malate               | nd                    | nd           |       | 1350 ± 54             | 997 ± 18     | *     |
| Ethyl phenyllactate        | 243 ± 5               | 226 ± 7      | ns    | 553 ± 31              | 476 ± 1      | ns    |
| Monoethylsuccinate         | nd                    | nd           |       | 12783 ± 373           | 12151 ± 1071 | ns    |
| Ethyl vanillate            | nd                    | nd           |       | 5 ± 1                 | 3 ± 1        | ns    |

Values expressed in µg/L of IS (1-heptanol) as average ± standard deviation ( $n = 2$ ). *Sign.*: \*, \*\*, and ns indicate significance at  $p < 0.05$ , 0.01, and not significant, respectively.

**Table S2.** Free aroma compounds detected in Nebbiolo wines, vintages 2015 and 2016, produced from cv. Nebbiolo control and treated grapes.

| Target compound            | Nebbiolo, 2015 vintage |              |       | Nebbiolo, 2016 vintage |              |       |
|----------------------------|------------------------|--------------|-------|------------------------|--------------|-------|
|                            | Control                | Treated      | Sign. | Control                | Treated      | Sign. |
| Isobutyric acid            | nd                     | nd           |       | 131 ± 1                | 128 ± 4      | ns    |
| Hexanoic acid              | 1373 ± 82              | 819 ± 49     | *     | 1437 ± 12              | 1506 ± 33    | ns    |
| Octanoic acid              | 1787 ± 136             | 2263 ± 172   | ns    | 1206 ± 17              | 1287 ± 29    | ns    |
| Decanoic acid              | nd                     | nd           |       | 251 ± 6                | 221 ± 5      | *     |
| 9-decenoic acid            | nd                     | nd           |       | nd                     | nd           |       |
| Butyric acid               | nd                     | nd           |       | 16 ± 1                 | 19 ± 1       | ns    |
| 2-furoic acid              | nd                     | nd           |       | 8 ± 1                  | 10 ± 1       | *     |
| Isovaleric acid            | nd                     | nd           |       | 687 ± 1                | 707 ± 1      | *     |
| Isobutanol                 | nd                     | nd           |       | 402 ± 15               | 437 ± 22     | ns    |
| 3-penten-2-ol              | 45 ± 1                 | 182 ± 1      | **    | nd                     | nd           |       |
| 3-penten-ol                | nd                     | nd           |       | nd                     | nd           |       |
| Isoamyl alcohol            | 2229 ± 1073            | 1292 ± 622   | ns    | 30189 ± 761            | 29993 ± 1610 | ns    |
| 1-pentanol                 | nd                     | nd           |       | nd                     | nd           |       |
| 2-hexanol                  | nd                     | nd           |       | nd                     | nd           |       |
| 4-methyl-2-pentanol        | 119 ± 1                | 194 ± 1      | ***   | nd                     | nd           |       |
| 4-methylpentan-1-ol        | nd                     | nd           |       | 53 ± 1                 | 61 ± 1       | *     |
| 3-methyl-1-pentanol        | 129 ± 4                | 99 ± 3       | *     | nd                     | nd           |       |
| Hexanol                    | 1897 ± 32              | 4033 ± 69    | **    | 1666 ± 19              | 1618 ± 17    | ns    |
| <i>cis</i> -3-hexen-1-ol   | 10 ± 5                 | 1 ± 1        | ns    | 56 ± 1                 | 60 ± 1       | ns    |
| <i>trans</i> -3-hexenol    | nd                     | nd           |       | 16 ± 1                 | 15 ± 1       | ns    |
| 3-ethoxypropanol           | nd                     | nd           |       | 6 ± 1                  | 8 ± 1        | *     |
| 2-butoxyethanol            | nd                     | nd           |       | 25 ± 1                 | 27 ± 1       | *     |
| Octanol                    | nd                     | nd           |       | 7 ± 1                  | 8 ± 1        | ns    |
| Methionol                  | nd                     | nd           |       | nd                     | nd           |       |
| Guaiacol                   | nd                     | nd           |       | 543 ± 38               | 494 ± 12     | ns    |
| 2-phenylethanol            | 16462 ± 2400           | 26603 ± 2494 | ns    | 46787 ± 4220           | 43367 ± 1808 | ns    |
| 4-vinyl guaiacol           | nd                     | nd           |       | 396 ± 2                | 386 ± 13     | ns    |
| 4-vinylphenol              | nd                     | nd           |       | 500 ± 41               | 475 ± 5      | ns    |
| 4-ethylguaiacol            | nd                     | nd           |       | 142 ± 2                | 28 ± 1       | **    |
| 4-ethylphenol              | nd                     | nd           |       | 164 ± 2                | 18 ± 1       | **    |
| Ethyl 3-methyl-butanoate   | 18 ± 1                 | 13 ± 1       | **    | nd                     | nd           |       |
| Ethyl 2-methylbutanoate    | nd                     | nd           |       | 27 ± 1                 | 29 ± 2       | ns    |
| Ethyl isovalerate          | nd                     | nd           |       | 32 ± 1                 | 35 ± 2       | ns    |
| Isoamyl acetate            | 1093 ± 28              | 2714 ± 68    | **    | 924 ± 25               | 900 ± 44     | ns    |
| Ethyl hexanoate            | 284 ± 3                | 602 ± 6      | **    | 194 ± 8                | 211 ± 7      | ns    |
| Hexyl acetate              | 7 ± 1                  | 12 ± 1       | *     | nd                     | nd           |       |
| Ethyl lactate              | nd                     | nd           |       | 4815 ± 54              | 4711 ± 47    | ns    |
| Ethyl-2-hydroxyisovalerate | nd                     | nd           |       | 33 ± 1                 | 34 ± 1       | ns    |
| Ethyl octanoate            | 399 ± 11               | 793 ± 23     | **    | 272 ± 6                | 307 ± 14     | ns    |
| Ethyl-3-hydroxybutyrate    | nd                     | nd           |       | 27 ± 1                 | 34 ± 1       | ns    |
| Ethyl-2-hydroxyhexanoate   | nd                     | nd           |       | nd                     | nd           |       |
| Isoamyl lactate            | 194 ± 19               | 304 ± 30     | ns    | 297 ± 1                | 311 ± 6      | ns    |
| Ethyl decanoate            | 83 ± 8                 | 108 ± 10     | ns    | 100 ± 6                | 83 ± 2       | ns    |
| Diethyl succinate          | 2858 ± 152             | 5363 ± 286   | *     | 2643 ± 67              | 2959 ± 10    | ns    |
| Ethyl-4-hydroxybutanoate   | nd                     | nd           |       | 617 ± 13               | 641 ± 5      | ns    |
| Ethyl 9-decenoate          | nd                     | nd           |       | nd                     | nd           |       |
| 2-phenylethyl acetate      | 221 ± 6                | 542 ± 16     | **    | 315 ± 4                | 286 ± 5      | ns    |
| Ethyl malate               | nd                     | nd           |       | nd                     | nd           |       |
| Ethyl phenyllactate        | 498 ± 19               | 1049 ± 40    | *     | 924 ± 14               | 1000 ± 54    | ns    |
| Monoethylsuccinate         | nd                     | nd           |       | 8957 ± 332             | 9708 ± 313   | ns    |
| Ethyl vanillate            | nd                     | nd           |       | 288 ± 14               | 295 ± 16     | ns    |

Values expressed in µg/L of IS (1-heptanol) as average ± standard deviation ( $n = 2$ ). *Sign.*: \*, \*\*, \*\*\*, and ns indicate significance at  $p < 0.05$ , 0.01, 0.001, and not significant, respectively.



**Figure S1.** Weather data gathered from the weather station of Acqui Terme in 2015 and 2016 years, from June 21<sup>st</sup> to October 31<sup>st</sup>. Data from Arpa Piemonte (2017).