



**Supplementary Figure 1.** Base peak chromatogram spectra of potato roots collected from a susceptible potato cultivar, Up-to-date. Represented: inoculated (A1R1; top graph) and un-inoculated (A2R1; bottom graph) with *Spongospora subterranea* f. sp. *subterranea*..

**Supplementary Table 1.** Organic compounds in roots and root exudates from potato cultivars differing in susceptibility to *Spongospora subterranea* f. sp. *subterranea* detected using UPLC-MS.

| Putative identification                       | ESI* | M/z    | Rt (min) | Roots | Root exudates | Susceptible cultivars | Tolerant cultivars |
|---|------|--------|----------|-------|---------------|-----------------------|--------------------|
| Dipentyl sulphite                             | -    | 221.12 | 11.08    |       | +             | +                     |                    |
| Cerulenin                                     | -    | 224.13 | 3.83     |       | +             | +                     |                    |
| 8-Quinolinol                                  | +    | 146.06 | 5.54     |       | +             |                       | +                  |
| 1-Octanamine                                  | +    | 130.16 | 5.89     |       | +             | +                     |                    |
| Indoline                                      | -    | 120.08 | 4.77     | +     | +             | +                     | +                  |
| Isocyanatocyclohexane                         |      | 126.09 | 2.74     |       | +             |                       | +                  |
| Lauraldehyde                                  | -    | 185.19 | 7.16     |       | +             |                       | +                  |
| 2-Allyl-4(2-methyl-2butanyl)phenol            | -    | 205.16 | 11.78    |       | +             |                       | +                  |
| N,N,N,N-Tetramethylphosphonous diamide        | -    | 121.08 | 4.79     |       | +             | +                     | +                  |
| 6-Ethoxy-1,3-benzothiazole-2(3H)-thione       | -    | 212.02 | 10.37    |       | +             |                       | +                  |
| Bis(2-ethylhexyl)1,2-cyclohexanedicarboxylate | -    | 397.33 | 10.1     |       | +             |                       | +                  |
| Phenylbis(diethylamino)_phosphine             | -    | 253.18 | 10.8     |       | +             |                       | +                  |
| 3,20-Bis_(dimethylhydrazone)pregn-4-ene       | -    | 399.35 | 10.04    |       | +             |                       | +                  |
| Estralutin                                    | +    | 429.3  | 13.36    |       | +             |                       | +                  |
| 6-Propyl -3,4,5-petrahydro-3-pyridinol        | +    | 142.12 | 2.74     |       | +             |                       | +                  |
| 7-Cyano-7-deazaguanine                        | -    | 176.06 | 2.27     |       | +             |                       | +                  |
| Cyclopamine                                   | -    | 412.32 | 8.56     |       | +             |                       | +                  |
| 4-(Dodecylamino)-4-oxo-3-sulfobutanoic acid   | -    | 366.19 | 9.88     |       | +             |                       | +                  |
| Methysergide                                  | -    | 354.22 | 7.27     |       | +             |                       | +                  |
| Octylphenol                                   | -    | 207.17 | 8.98     |       | +             |                       | +                  |
| 6-Aminohexanoic acid                          | -    | 132.1  | 2.74     |       | +             |                       | +                  |
| 3-Oxododecanoic acid                          | -    | 213.15 | 13.61    |       | +             |                       | +                  |
| 1-(2-Methoxyphenyl)piperazine                 | -    | 193.13 | 8.39     |       | +             |                       | +                  |

|   |   |        |       |   |   |   |   |
|---|---|--------|-------|---|---|---|---|
| 6-Azido-1-hexanamine                        | - | 143.13 | 2.74  |   | + | + | + |
| 2,3,4,4-Tetrahydroxybutanoic acid           | - | 153.04 | 2.7   |   | + |   | + |
| 4-(3-Pyridinyl)butanoic acid                | - | 166.07 | 5.01  |   | + |   | + |
| 3,5-Dithiaheptane                           | - | 137.05 | 2.74  |   | + |   | + |
| 4-vinylguaiacol                             | - | 151.08 | 8.65  |   | + |   | + |
| 1,1'-(1,6-Hexanedyl)bis(1-nitrosourea)      | + | 254.15 | 5.14  |   | + |   | + |
| N-Acetylleucine                             | + | 173.11 | 2.52  |   | + |   | + |
| 6-Ethoxy-1,3-benzothiazole-2(3H)-thione     | + | 211.3  | 10.36 |   | + |   | + |
| N-(3-(aminomethyl)benzyl)-acetamide         | + | 177.25 | 5.36  |   | + |   | + |
| Hypoglycine acid                            | - | 142.09 | 1.98  |   | + |   | + |
| 4-(3-Pyridinyl)butanoic acid                | - | 166.09 | 4.77  |   | + |   | + |
| Dethiobiotin                                | - | 215.14 | 4.4   |   | + |   | + |
| 4-(Dodecylamino)-4-oxo-3-sulfobutanoic acid | - | 366.2  | 9.88  |   | + |   | + |
| 8-Amino-7-oxononanoic acid                  | - | 188.13 | 2.69  |   | + |   | + |
| 1-Acetyl-1H-indole-3-carbaldehyde           | - | 188.07 | 5.48  | + | + |   | + |
| Ally bis(1-aziridinyl)phosphinate           | - | 188.07 | 5.48  |   | + |   | + |
| 2-(Phenylsulfanyl)cyclododecanone           | - | 291.17 | 6.17  |   | + |   | + |
| (9Z)-1,9,16-Heptadecatriene-4,6-dyn-3-one   | - | 241.16 | 4.24  |   | + |   | + |
| 3,20-Bis(dimethylhydrazono)pregn-4-ene      | - | 399.34 | 10.02 |   | + |   | + |
| Diethylene glycol, amino, N-octyl           | - | 218.21 | 7.77  |   | + |   | + |
| Methysergide                                | - | 354.22 | 7.26  |   | + |   | + |
| Obscuraminol acid                           | + | 278.25 | 13.4  |   | + | + |   |
| Farnesyl acetone                            | + | 263.24 | 14.24 |   | + | + |   |
| Trimethylolmelamine                         | - | 217.11 | 4.74  |   | + | + |   |
| Queuosine                                   | - | 410.17 | 11.64 |   | + | + |   |
| Diprogulic acid                             | - | 275.11 | 5.25  |   | + | + |   |
| Monocyclohexyl phthalate                    | + | 249.11 | 11.37 |   | + | + |   |
| Lauric monoethanolamide                     | + | 244.23 | 8.28  |   | + | + |   |
| 2-[2-(Octylamino) ethoxy]ethanol            | + | 218.21 | 7.78  |   | + | + |   |

|   |   |         |       |   |   |   |   |
|---|---|---------|-------|---|---|---|---|
| Heptaethylene glycol                          | + | 327.2   | 5.75  |   | + | + |   |
| Drofenine                                     | + | 318.24  | 13.4  |   | + | + |   |
| 6-Amino-2(1H)-pyrimidinone                    | + | 112.06  | 2.64  |   | + | + |   |
| Hexadecanodoale                               | + | 265.2   | 13.14 |   | + | + |   |
| Linoleohydroxamic acid                        | + | 280.26  | 13.88 |   | + | + | + |
| P,P-Di-1-piperidinyolphosphinic hydrazide     | + | 247.17  | 4.24  |   | + | + |   |
| 2-Amino-1,3,4,5-icosanetetrol                 | + | 362.33  | 10.33 |   | + | + |   |
| N-Benzyl-octadecan-1-amine                    | + | 360.36  | 14.25 |   | + | + |   |
| 2-Amino-1,3-octadecanediol                    | + | 302.31  | 11.37 |   | + | + |   |
| Dihexylphthalate                              | + | 335.22  | 13.14 |   | + | + |   |
| 11-Aminoundecanoic acid                       | + | 202.18  | 2.72  |   | + | + | + |
| 1,3,5-Benzenetriamine                         | + | 124.09  | 4.25  |   | + | + |   |
| 9,12,15-Octadecadrienoic acid                 | + | 279.23  | 13.63 |   | + | + |   |
| 6-Azido-1-hexanamine                          | + | 143.13  | 2.73  |   | + | + | + |
| 6-Phenyl-4 hexyn-2-cn                         | + | 158.244 | 2.72  |   | + | + |   |
| Betonicine                                    | + | 159.19  | 1.98  |   | + | + |   |
| 2-Methoxy-4-vinylphenol                       | + | 150.18  | 8.67  |   | + | + |   |
| N,N,N,N-Tetramethylphosphonous diamide        | + | 253.18  | 4.77  |   | + | + | + |
| Dopamantine                                   | + | 315.41  | 4.64  |   | + | + |   |
| L-Leucyl-L-leucyl-aspartic acid               | - | 360.21  | 4.7   |   | + | + | + |
| N-Cyclododecyl-2-(4-methoxyphenoxy) acetamide | - | 348.25  | 7.17  |   | + | + | + |
| p-Heptyloxybenzylidene p-heptylaniline        | + | 394.31  | 9.2   | + |   |   | + |
| 2-Naphthylamine                               | + | 144.08  | 5.84  | + |   |   | + |
| Glutaryl carnitine                            | + | 276.14  | 2.59  | + |   |   | + |
| 6-Ethoxybenzothiazolethiol                    | + | 212.02  | 10.47 | + |   |   | + |
| 4,6-Nonanedione                               | + | 155.11  | 8.83  | + |   |   | + |
| Alafosfalin                                   | + | 209.1   | 1.97  | + |   |   | + |
| Dimethylphosphoramidocyanidic acid            | + | 133.01  | 2.57  | + |   |   | + |
| Inosine                                       | - | 267.07  | 2.22  | + |   |   | + |

|  |   |        |       |   |   |  |   |   |
|--|---|--------|-------|---|---|--|---|---|
| 2,3-Dinor-8-iso PGF1 $\alpha$                      | - | 327.22 | 9.41  | + |   |  |   | + |
| Threonic acid                                      | - | 136.1  | 2.72  |   | + |  | + |   |
| N-Undecanoylglycine                                | + | 242.17 | 10.14 | + |   |  |   | + |
| 8-(5-Hexyl-2-furyl) octanoic acid                  | + | 295.23 | 12.11 | + |   |  | + | + |
| 15-Keto-PGE2                                       | + | 394.31 | 9.15  | + |   |  |   | + |
| 1-acetyl-3-formylindole                            | + | 188.07 | 5.44  | + |   |  |   | + |
| Methoprene   | + | 311.26 | 13.05 | + |   |  |   | + |
| Docosapentaenoylcarnitine                          | + | 474.36 | 13.5  | + |   |  |   | + |
| 1-18:2-lysophosphatidylethanolamine                | + | 478.29 | 13.68 | + |   |  |   | + |
| Ornithylornithylornithine                          | - | 359.24 | 10.42 | + |   |  |   | + |
| Medemo   | + | 210.08 | 6.57  | + |   |  | + |   |
| Ureidopropanoic acid                               | + | 131.05 | 1.78  | + |   |  | + |   |
| 1,2-Dihydroaceanthrylene                           | + | 203.08 | 5.51  | + |   |  | + | + |
| N-[2-(Dimethylamino)propyl]hydrazinecarbothioamide | + | 175.1  | 7.24  | + |   |  | + |   |
| 2,2'-(Cyclohexylphosphinediyl)dipyridine           | - | 281.21 | 14.37 | + |   |  | + |   |
| D-Glucose diethyl dithioacetal                     | + | 285.08 | 8.32  | + |   |  | + |   |
| Pyrroline hydroxycarboxylic acid                   | - | 128.03 | 3.87  | + |   |  | + |   |
| (+)-Jasmonic acid                                  | + | 209.12 | 13.97 | + |   |  | + |   |
| Glycerophosphoglycerol                             | + | 245.04 | 1.985 | + |   |  | + |   |
| 2-(isopropylamino)ethanol                          | + | 104.11 | 1.81  | + |   |  | + |   |
| 5-Aminopentanoic acid                              | + | 118.09 | 1.99  | + |   |  | + |   |
| 1-Heptadecanamine                                  | + | 256.3  | 12.42 | + |   |  | + |   |
| Hexyl disulphide                                   | + | 235.16 | 5.88  | + |   |  | + |   |
| N,N-Dinonyl-2-(2-thienyl) acetamide                | + | 394.31 | 10.48 | + |   |  | + |   |
| Vorinostat   | + | 398.24 | 13.01 | + |   |  | + |   |
| 2,3-Dinor-8-iso PGF1 $\alpha$                      | - | 685.36 | 13.33 | + |   |  | + |   |
| Carbon;zicornium                                   | - | 128.96 | 1.68  | + |   |  | + |   |
| 4-Dodecylphenol                                    | + | 263.24 | 14.21 | + |   |  | + |   |
| N-Benzyl-linoliamide                               | + | 280.26 | 14.21 | + |   |  | + |   |

|  |   |        |       |   |   |   |
|--|---|--------|-------|---|---|---|
| Phenylpyruvic acid                     | + | 164.16 | 2.91  | + | + |   |
| 4-Hydroxy-4-(3-pyridinyl)butanoic acid | + | 181.19 | 2.91  | + | + |   |
| Ethosuximide                           | + | 141.17 | 1.98  | + | + |   |
| 1H-Purin-6-amine                       | - | 136.06 | 2.74  | + |   | + |
| Spiroxamine                            | + | 298.28 | 12.61 | + | + | + |
| Guanine                                | - | 152.06 | 4.17  | + | + | + |
| Leucylproline                          | + | 229.16 | 5.16  | + | + | + |

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\*Electrospray ionization

+ The compound was present in the sample

Blank – the compound was not present in the sample

M/z-Atomic mass

Rt(min)-Retention time in minutes