Supplementary Table 1 Sample harvesting dates and labeling for metabolomics of leaves in North Carolina

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| **Harvest time**  | **Date** | **Sample labeling in the field** | **Leaf number and group labelling used in PCA and HCA**  |
| First harvest (leaves 1-2) | Aug. 3rd | MP1R1- I (1-10 plants in plot 1)MP1R2- I (11-20 plants in plot 1)MP1R3- I (61-70 plants in plot 2)MP1R4- I (71-80 plants in plot 2)MP1R5- I (121-130 plants in plot 3)MP1R6- I (131-140 plants in plot 3) | I: 1-2 leaves**U-F1H** for the first year, 6 biological samples**U-S1H** for the second year, 6 biological samples |
| Second harvest (leaves 3-8) | Aug. 24th | MP2R1- II, III (1-10 plants in plot 1)MP2R2- II, III (11-20 plants in plot 1)MP2R3- II , III (61-70 plants in plot 2)MP2R4- II, III (71-80 plants in plot 2)MP2R5- II, III (121-130 plants in plot 3)MP2R6- II, III (131-140 plants in plot 3) | II: 3-5 leaves**U-F2H** for the first year, 6 biological samples**U-S2H** for the second year, 6 biological samplesIII: 6-8 leaves**U-F3H** for the first year, 6 biological samples**U-S3H** for the second year, 6 biological samples |
| Third harvest (leaves 9-14) | Sept. 14th | MP3R1- IV, V (1-10 plants in plot 1)MP3R2- IV, V (11-20 plants in plot 1)MP3R3- IV, V (61-70 plants in plot 2)MP3R4- IV, V (71-80 plants in plot 2)MP3R5- IV, V (121-130 plants in plot 3)MP3R6- IV, V (131-140 plants in plot 3) | IV: 9-11 leaves**U-F4H** for the first year, 6 biological samples**U-S4H** for the second year, 6 biological samplesV: 12-14 leaves**U-F5H** for the first year, 6 biological samples**U-S5H** for the second year, 6 biological samples |
| Forth harvest (leaves 15-20) | Oct. 4th | MP4R1- VI, VII (1-10 plants in plot 1)MP4R2- VI, VII (11-20 plants in plot 1)MP4R3- VI, VII (61-70 plants in plot 2)MP4R4- VI, VII (71-80 plants in plot 2)MP4R5- VI, VII (121-130 plants in plot 3)MP4R6- VI, VII (131-140 plants in plot 3) | VI: 15-17 leaves; **U-F6H** for the first year, 6 biological samples**U-S6H** for the second year, 6 biological samplesVII: 18-20 leaves**U-F7H** for the first year, 6 biological samples**U-S7H** for the second year, 6 biological samples |

Each leaf will be cut into two sections. One including midrib for curing and the other half frozen in liquid nitrogen and stored in freezer. MP1R1-I: Metabolomics Pick #1 Replicate 1- I group. PCA and HCA: principal component analysis and hierarchical clustering analysis. Groups of U-F1H through U-F7H were USA’s samples in the First year from positions 1 to 7 Harvest. Groups of U-S1H through U-S7H were USA’s samples in the Second year from positions 1 to 7 Harvest.