

1 **Supplemental Table I. The total amino acid amounts obtained from the amino acid**
2 **analysis performed on the wildtype, single-mutants, and double-mutant leaves.** Samples
3 were sent to TAMU Protein Chemistry Laboratory at Texas A&M for amino acid analysis. Each
4 value represents the mean \pm SD of three independent plants.

| Amino Acids | Amino Acid Composition ($\mu\text{g g}^{-1}$ Leaf Tissue) | | | |
|-------------|--|-------------------|-------------------|----------------------------------|
| | COL | $\beta\text{ca}2$ | $\beta\text{ca}4$ | $\beta\text{ca}2\beta\text{ca}4$ |
| ASP | 185.3 \pm 12.6 | 173.0 \pm 17.6 | 179.6 \pm 23.5 | 87.0 \pm 28.4 |
| GLU | 339.1 \pm 13.0 | 349.3 \pm 16.1 | 342.4 \pm 37.6 | 245.8 \pm 94.7 |
| ASN | 23.5 \pm 2.2 | 20.0 \pm 2.8 | 20.2 \pm 2.3 | 22.1 \pm 6.6 |
| SER | 83.6 \pm 9.6 | 86.0 \pm 13.7 | 119.6 \pm 31.4 | 407.7 \pm 256.2 |
| GLN | 246.5 \pm 19.5 | 316.4 \pm 47.2 | 256.9 \pm 14.9 | 113.8 \pm 41.0 |
| HIS | 0.0 \pm 0.0 | 0.0 \pm 0.0 | 0.0 \pm 0.0 | 0.0 \pm 0.0 |
| GLY | 76.5 \pm 18.3 | 44.8 \pm 11.6 | 35.6 \pm 11.3 | 177.0 \pm 87.5 |
| THR | 59.0 \pm 11.4 | 56.3 \pm 12.1 | 76.0 \pm 16.7 | 23.0 \pm 6.7 |
| ALA | 45.5 \pm 7.2 | 23.4 \pm 4.0 | 36.5 \pm 5.8 | 25.1 \pm 8.6 |
| ARG | 9.3 \pm 5.0 | 12.2 \pm 7.4 | 16.1 \pm 9.1 | 6.9 \pm 3.7 |
| TYR | 1.2 \pm 0.2 | 0.7 \pm 0.1 | 1.4 \pm 0.2 | 0.6 \pm 0.2 |
| VAL | 8.2 \pm 1.5 | 6.6 \pm 0.2 | 8.2 \pm 0.6 | 4.2 \pm 1.3 |
| MET | 0.0 \pm 0.0 | 0.0 \pm 0.0 | 0.0 \pm 0.0 | 0.0 \pm 0.0 |
| TRP | 6.8 \pm 8.7 | 0.7 \pm 0.6 | 0.7 \pm 1.1 | 0.7 \pm 0.7 |
| PHE | 9.7 \pm 2.3 | 5.4 \pm 0.7 | 6.2 \pm 1.6 | 6.2 \pm 2.1 |
| ILE | 4.3 \pm 2.9 | 1.9 \pm 1.0 | 2.5 \pm 1.2 | 1.2 \pm 0.4 |
| LEU | 1.9 \pm 0.5 | 2.2 \pm 0.3 | 3.5 \pm 0.3 | 1.7 \pm 0.6 |
| LYS | 1.9 \pm 0.3 | 2.1 \pm 0.7 | 3.2 \pm 0.6 | 1.5 \pm 0.5 |
| PRO | 24.5 \pm 5.0 | 33.3 \pm 11.7 | 25.5 \pm 1.8 | 9.8 \pm 17.0 |

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