

Supplementary Table S1 Growth characteristics of the cultivar Giza179 as affected by different N treatments for the seasons 2017 and 2018.

| <b>N.<br/>Treatment</b> | Leaf area index |       | Dry matter (g/m <sup>2</sup> ) |      | Plant Height (cm) |        |
|-------------------------|-----------------|-------|--------------------------------|------|-------------------|--------|
|                         | 2017            | 2018  | 2017                           | 2018 | 2017              | 2018   |
| <b>T1</b>               | 3.55cd          | 3.93c | 400d                           | 418d | 90.0e             | 93.2e  |
| <b>T2</b>               | 5.94a           | 6.32a | 530a                           | 550a | 101.1a            | 103.1a |
| <b>T3</b>               | 4.84b           | 5.22b | 480b                           | 498b | 100.2b            | 102.2b |
| <b>T4</b>               | 3.92c           | 4.72b | 460c                           | 478c | 98.5c             | 100.1c |
| <b>T5</b>               | 3.79cd          | 4.17c | 460c                           | 478c | 96.4d             | 98.4d  |
| <b>T6</b>               | 3.34d           | 3.77c | 360e                           | 378e | 89.0f             | 91.0f  |
| <b>T7</b>               | 2.17e           | 2.97d | 260f                           | 278f | 81.3g             | 83.4g  |

T<sub>1</sub>: Recommended dose of N as urea (165 kg N/ha), T<sub>2</sub>: Recommended dose of N as Anhydrous Ammonia (165 kg N/ha), T<sub>3</sub>: 3/4 dose of Anhydrous Ammonia + 1/4 N as urea at panicle initiation., T<sub>4</sub>: 3/4 dose of Anhydrous Ammonia + 1/4 dose of N as urea at late booting, T<sub>5</sub>: 1/2 dose of N as Anhydrous Ammonia + 1/2 N as urea at panicle initiation, T<sub>6</sub>: 1/2 dose of N as Anhydrous Ammonia + 1/2 N as urea at late booting, T<sub>7</sub>: Control (Zero Fertilizer).

Supplementary Table S2 Number of tillers and panicles for the cultivar Giza179 as affected by the different N-treatments for the seasons 2017 and 2018.

| <b>N treatments</b>  | Number of tillers per m <sup>2</sup> |        | Number of panicles per m <sup>2</sup> |        |
|----------------------|--------------------------------------|--------|---------------------------------------|--------|
|                      | 2017                                 | 2018   | 2017                                  | 2018   |
| <b>T<sub>1</sub></b> | 428.0e                               | 443.3e | 413.3e                                | 398.0e |
| <b>T<sub>2</sub></b> | 540.1a                               | 555.4a | 527.8a                                | 512.5a |
| <b>T<sub>3</sub></b> | 492.0b                               | 507.3b | 479.3b                                | 464.0b |
| <b>T<sub>4</sub></b> | 476.1c                               | 491.3c | 455.3c                                | 440.1c |
| <b>T<sub>5</sub></b> | 470.7d                               | 485.3d | 443.9d                                | 428.7d |
| <b>T<sub>6</sub></b> | 420.0f                               | 435.3f | 393.3f                                | 378.0f |
| <b>T<sub>7</sub></b> | 342.0g                               | 357.2g | 333.3g                                | 318.0g |

T<sub>1</sub>: Recommended dose of N as urea (165 kg N/ha), T<sub>2</sub>: Recommended dose of N as Anhydrous Ammonia (165 kg N/ha), T<sub>3</sub>:3/4 dose of Anhydrous Ammonia +1/4 N as urea at panicle initiation., T<sub>4</sub>:3/4 dose of Anhydrous Ammonia +1/4 dose of N as urea at late booting, T<sub>5</sub>: 1/2 dose of N as Anhydrous Ammonia +1/2 N as urea at panicle initiation, T<sub>6</sub>: 1/2 dose of N as Anhydrous Ammonia +1/2 N as urea at late booting, T<sub>7</sub>: Control (Zero Fertilizer).

Supplementary Table S3 Performance of Giza179 cultivar for panicle weight (g), number of field grain per panicle, number of unfilled grains per panicle and 1000-grain weight (g) for the seasons 2017 and 2018.

| <b>N treatments</b>  | Panicle weight (g) |        | Filled grain per panicle |        | unfilled grain per panicle |      | 1000-grain weight (g) |        |
|----------------------|--------------------|--------|--------------------------|--------|----------------------------|------|-----------------------|--------|
|                      | 2017               | 2018   | 2017                     | 2018   | 2017                       | 2018 | 2017                  | 2018   |
| <b>T<sub>1</sub></b> | 2.67b              | 2.75b  | 88.9d                    | 95.6d  | 2.5e                       | 4.5e | 27.50b                | 28.50b |
| <b>T<sub>2</sub></b> | 3.15a              | 3.23a  | 103.5a                   | 110.2a | 4.0b                       | 6.0b | 25.50c                | 26.50c |
| <b>T<sub>3</sub></b> | 2.90ab             | 2.98ab | 94.8c                    | 100.5c | 2.5e                       | 4.5e | 27.83ab               | 28.83b |
| <b>T<sub>4</sub></b> | 2.88ab             | 2.96ab | 100.5b                   | 105.7b | 3.5c                       | 5.5c | 27.00b                | 28.00b |
| <b>T<sub>5</sub></b> | 2.49b              | 2.57b  | 99.0b                    | 103.5b | 3.0d                       | 5.0d | 27.50b                | 28.50b |
| <b>T<sub>6</sub></b> | 1.99c              | 2.07c  | 82.5e                    | 89.1e  | 6.0a                       | 8.0a | 29.00a                | 30.00a |
| <b>T<sub>7</sub></b> | 1.72c              | 1.80c  | 78.5f                    | 85.1f  | 1.6f                       | 3.6f | 29.00a                | 30.00a |

T<sub>1</sub>: Recommended dose of N as urea (165 kg N/ha), T<sub>2</sub>: Recommended dose of N as Anhydrous Ammonia (165 kg N/ha), T<sub>3</sub>:3/4 dose of Anhydrous Ammonia +1/4 N as urea at panicle initiation., T<sub>4</sub>:3/4 dose of Anhydrous Ammonia +1/4 dose of N as urea at late booting, T<sub>5</sub>: 1/2 dose of N as Anhydrous Ammonia +1/2 N as urea at panicle initiation, T<sub>6</sub>: 1/2 dose of N as Anhydrous Ammonia +1/2 N as urea at late booting, T<sub>7</sub>: Control (Zero Fertilizer).

Supplementary Table S4 Grain and straw yields for the cultivar Giza179 as affected by the different N-treatments for the seasons 2017 and 2018.

| N<br>treatments      | Grain yield (t/ha) |        | Straw yield (t/ha) |        |
|----------------------|--------------------|--------|--------------------|--------|
|                      | 2017               | 2018   | 2017               | 2018   |
| <b>T<sub>1</sub></b> | 7.76bc             | 8.32bc | 9.08bc             | 9.97bc |
| <b>T<sub>2</sub></b> | 9.44a              | 10.00a | 10.44a             | 11.07a |
| <b>T<sub>3</sub></b> | 9.26a              | 9.82a  | 9.97a              | 10.86a |
| <b>T<sub>4</sub></b> | 8.58ab             | 9.14ab | 9.32b              | 10.21b |
| <b>T<sub>5</sub></b> | 8.10bc             | 8.66bc | 9.23b              | 10.12b |
| <b>T<sub>6</sub></b> | 7.30c              | 7.86c  | 8.63cd             | 9.52d  |
| <b>T<sub>7</sub></b> | 6.18d              | 6.74d  | 8.23d              | 9.12d  |

T<sub>1</sub>: Recommended dose of N as urea (165 kg N/ha), T<sub>2</sub>: Recommended dose of N as Anhydrous Ammonia (165 kg N/ha), T<sub>3</sub>:3/4 dose of Anhydrous Ammonia +1/4 N as urea at panicle initiation., T<sub>4</sub>:3/4 dose of Anhydrous Ammonia +1/4 dose of N as urea at late booting, T<sub>5</sub>: 1/2 dose of N as Anhydrous Ammonia +1/2 N as urea at panicle initiation, T<sub>6</sub>: 1/2 dose of N as Anhydrous Ammonia +1/2 N as urea at late booting, T<sub>7</sub>: Control (Zero Fertilizer).