



C. 22-24 DAF whole seed

| Group |          | Group 1 |      |      |      |      |      |      | Group 2 |       |
|-------|----------|---------|------|------|------|------|------|------|---------|-------|
| nt    | Mismatch | CHS1    | CHS2 | CHS3 | CHS4 | CHS5 | CHS6 | CHS9 | CHS7    | CHS8  |
| 18    | 0        | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00  |
|       | 2        | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10    | 0.19  |
| 19    | 0        | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00  |
|       | 2        | 0.10    | 0.00 | 0.10 | 0.10 | 0.10 | 0.00 | 0.10 | 0.19    | 0.19  |
| 20    | 0        | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.10    | 0.00  |
|       | 2        | 0.29    | 0.29 | 0.19 | 0.19 | 0.19 | 0.19 | 0.10 | 0.29    | 0.19  |
| 21    | 0        | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00  |
|       | 2        | 2.71    | 1.94 | 2.52 | 2.71 | 2.71 | 1.06 | 2.13 | 14.23   | 13.74 |
| 22    | 0        | 0.19    | 0.00 | 0.19 | 0.19 | 0.19 | 0.00 | 0.00 | 0.00    | 0.19  |
|       | 2        | 9.48    | 5.03 | 9.39 | 6.77 | 6.77 | 3.19 | 6.19 | 0.58    | 0.58  |
| 23    | 0        | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00  |
|       | 2        | 0.19    | 0.29 | 0.19 | 0.10 | 0.10 | 0.19 | 0.19 | 0.10    | 0.00  |
| 24    | 0        | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00  |
|       | 2        | 4.55    | 2.61 | 4.74 | 4.06 | 4.06 | 1.84 | 4.06 | 0.87    | 0.77  |
| 25    | 0        | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00  |
|       | 2        | 0.29    | 0.10 | 0.19 | 0.19 | 0.19 | 0.00 | 0.19 | 0.00    | 0.00  |

D. 5-6mg seed weight seed coat

| Group |          | Group 1 |       |       |       |       |       |       | Group 2 |        |
|-------|----------|---------|-------|-------|-------|-------|-------|-------|---------|--------|
| nt    | Mismatch | CHS1    | CHS2  | CHS3  | CHS4  | CHS5  | CHS6  | CHS9  | CHS7    | CHS8   |
| 18    | 0        | 0.11    | 0.22  | 0.11  | 0.11  | 0.11  | 0.56  | 0.11  | 0.62    | 0.22   |
|       | 2        | 1.23    | 0.95  | 1.57  | 1.62  | 1.62  | 0.73  | 1.62  | 4.09    | 2.86   |
| 19    | 0        | 0.17    | 0.28  | 0.17  | 0.17  | 0.17  | 1.06  | 0.06  | 1.23    | 0.45   |
|       | 2        | 9.97    | 3.02  | 4.98  | 4.42  | 4.42  | 2.69  | 3.86  | 10.75   | 8.45   |
| 20    | 0        | 0.39    | 0.56  | 0.39  | 0.39  | 0.39  | 10.19 | 0.11  | 10.58   | 0.90   |
|       | 2        | 22.45   | 13.66 | 22.79 | 20.94 | 20.94 | 15.62 | 17.13 | 57.05   | 42.89  |
| 21    | 0        | 0.17    | 0.17  | 0.17  | 0.17  | 0.17  | 22.40 | 0.11  | 22.56   | 0.45   |
|       | 2        | 71.72   | 41.15 | 72.39 | 69.65 | 69.65 | 41.49 | 61.53 | 196.13  | 156.88 |
| 22    | 0        | 0.73    | 0.17  | 0.73  | 0.73  | 0.73  | 2.13  | 0.00  | 2.30    | 0.90   |
|       | 2        | 83.31   | 37.01 | 82.75 | 73.35 | 73.35 | 22.68 | 62.43 | 19.04   | 15.96  |
| 23    | 0        | 0.00    | 0.00  | 0.00  | 0.00  | 0.00  | 0.34  | 0.00  | 0.34    | 0.00   |
|       | 2        | 7.45    | 2.91  | 7.84  | 6.55  | 6.55  | 2.24  | 5.26  | 2.97    | 1.90   |
| 24    | 0        | 0.00    | 0.00  | 0.00  | 0.00  | 0.00  | 0.73  | 0.00  | 0.73    | 0.00   |
|       | 2        | 11.20   | 4.31  | 11.48 | 9.97  | 9.97  | 2.97  | 8.29  | 4.09    | 2.80   |
| 25    | 0        | 0.00    | 0.00  | 0.00  | 0.00  | 0.00  | 0.11  | 0.00  | 0.11    | 0.00   |
|       | 2        | 0.67    | 0.17  | 0.73  | 0.62  | 0.62  | 0.34  | 0.50  | 0.67    | 0.62   |

E. 10-25mg seed weight seed coat

| Group |          | Group 1 |        |        |        |        |        |        | Group 2 |         |
|-------|----------|---------|--------|--------|--------|--------|--------|--------|---------|---------|
| nt    | Mismatch | CHS1    | CHS2   | CHS3   | CHS4   | CHS5   | CHS6   | CHS9   | CHS7    | CHS8    |
| 18    | 0        | 0.08    | 0.08   | 0.08   | 0.08   | 0.08   | 0.41   | 0.00   | 0.41    | 0.17    |
|       | 2        | 1.65    | 0.99   | 1.90   | 1.82   | 1.82   | 0.91   | 1.65   | 5.71    | 4.47    |
| 19    | 0        | 0.25    | 0.25   | 0.25   | 0.25   | 0.25   | 0.91   | 0.17   | 0.91    | 0.25    |
|       | 2        | 5.46    | 2.65   | 5.79   | 5.30   | 5.30   | 2.15   | 4.80   | 15.14   | 12.91   |
| 20    | 0        | 0.25    | 0.66   | 0.25   | 0.25   | 0.25   | 8.94   | 0.08   | 9.27    | 0.99    |
|       | 2        | 19.69   | 14.07  | 19.86  | 18.62  | 18.62  | 14.89  | 16.71  | 67.60   | 57.18   |
| 21    | 0        | 0.99    | 1.99   | 0.99   | 0.99   | 0.99   | 67.44  | 1.32   | 69.42   | 4.30    |
|       | 2        | 257.67  | 180.47 | 255.77 | 260.73 | 260.73 | 146.54 | 239.71 | 1186.33 | 1019.76 |
| 22    | 0        | 2.81    | 0.50   | 2.81   | 2.81   | 2.81   | 6.37   | 0.00   | 6.87    | 3.31    |
|       | 2        | 251.63  | 106.58 | 248.82 | 228.46 | 228.46 | 60.40  | 193.54 | 97.39   | 87.21   |
| 23    | 0        | 0.00    | 0.00   | 0.00   | 0.00   | 0.00   | 0.50   | 0.00   | 0.50    | 0.00    |
|       | 2        | 12.00   | 4.55   | 12.08  | 10.34  | 10.34  | 3.06   | 8.19   | 8.11    | 6.70    |
| 24    | 0        | 0.00    | 0.00   | 0.00   | 0.00   | 0.00   | 4.55   | 0.00   | 4.55    | 0.00    |
|       | 2        | 10.76   | 11.34  | 29.95  | 28.38  | 28.38  | 10.10  | 22.92  | 29.29   | 19.61   |
| 25    | 0        | 0.00    | 0.00   | 0.00   | 0.00   | 0.00   | 0.58   | 0.00   | 0.58    | 0.00    |
|       | 2        | 1.16    | 0.58   | 0.99   | 0.91   | 0.91   | 0.74   | 0.83   | 3.48    | 1.74    |

F. 25-50mg seed weight seed coat

| Group |          | Group 1 |        |        |        |        |        |        | Group 2 |         |
|-------|----------|---------|--------|--------|--------|--------|--------|--------|---------|---------|
| nt    | Mismatch | CHS1    | CHS2   | CHS3   | CHS4   | CHS5   | CHS6   | CHS9   | CHS7    | CHS8    |
| 18    | 0        | 0.08    | 0.25   | 0.08   | 0.08   | 0.08   | 0.25   | 0.00   | 0.74    | 0.66    |
|       | 2        | 2.65    | 1.90   | 2.81   | 2.48   | 2.48   | 1.41   | 2.23   | 8.27    | 7.28    |
| 19    | 0        | 0.17    | 0.08   | 0.17   | 0.17   | 0.17   | 0.83   | 0.08   | 0.91    | 0.17    |
|       | 2        | 4.55    | 2.73   | 4.96   | 4.63   | 4.63   | 1.57   | 4.22   | 18.54   | 16.63   |
| 20    | 0        | 0.83    | 1.08   | 0.83   | 0.83   | 0.83   | 12.41  | 0.50   | 12.66   | 1.57    |
|       | 2        | 17.87   | 13.82  | 17.71  | 16.05  | 16.05  | 17.46  | 14.32  | 83.08   | 66.44   |
| 21    | 0        | 1.16    | 2.98   | 1.16   | 1.16   | 1.16   | 69.65  | 0.58   | 72.63   | 4.71    |
|       | 2        | 242.11  | 173.77 | 237.07 | 247.66 | 247.66 | 141.91 | 231.77 | 1449.21 | 1265.18 |
| 22    | 0        | 0.50    | 0.33   | 0.50   | 0.50   | 0.50   | 8.44   | 0.00   | 8.77    | 0.83    |
|       | 2        | 142.90  | 67.93  | 145.38 | 135.04 | 135.04 | 41.95  | 117.33 | 119.15  | 106.58  |
| 23    | 0        | 0.00    | 0.08   | 0.00   | 0.00   | 0.00   | 0.50   | 0.00   | 0.58    | 0.08    |
|       | 2        | 7.20    | 2.81   | 7.28   | 6.87   | 6.87   | 1.90   | 5.13   | 12.16   | 10.67   |
| 24    | 0        | 0.00    | 0.00   | 0.00   | 0.00   | 0.00   | 0.91   | 0.00   | 3.23    | 0.00    |
|       | 2        | 21.93   | 7.12   | 21.84  | 20.02  | 20.02  | 6.54   | 15.64  | 31.36   | 22.67   |
| 25    | 0        | 0.00    | 0.00   | 0.00   | 0.00   | 0.00   | 0.25   | 0.00   | 0.25    | 0.00    |
|       | 2        | 0.83    | 0.58   | 0.91   | 0.99   | 0.99   | 0.74   | 0.99   | 3.23    | 1.90    |

G. 50-75mg seed weight seed coat

| Group |          | Group 1 |        |        |        |        |        |        | Group 2 |         |
|-------|----------|---------|--------|--------|--------|--------|--------|--------|---------|---------|
| nt    | Mismatch | CHS1    | CHS2   | CHS3   | CHS4   | CHS5   | CHS6   | CHS9   | CHS7    | CHS8    |
| 18    | 0        | 0.09    | 0.09   | 0.09   | 0.09   | 0.09   | 0.61   | 0.09   | 0.61    | 0.00    |
|       | 2        | 4.52    | 2.96   | 5.04   | 4.95   | 4.95   | 2.09   | 4.35   | 20.25   | 16.51   |
| 19    | 0        | 0.17    | 0.35   | 0.17   | 0.17   | 0.17   | 1.74   | 0.09   | 2.00    | 0.52    |
|       | 2        | 8.17    | 4.61   | 8.17   | 8.17   | 8.17   | 3.39   | 7.82   | 37.55   | 33.46   |
| 20    | 0        | 0.43    | 0.96   | 0.43   | 0.43   | 0.43   | 14.78  | 0.09   | 15.38   | 1.48    |
|       | 2        | 26.77   | 20.95  | 26.95  | 25.73  | 25.73  | 24.86  | 22.95  | 138.20  | 118.47  |
| 21    | 0        | 1.74    | 3.04   | 1.74   | 1.74   | 1.74   | 75.53  | 1.74   | 78.58   | 6.52    |
|       | 2        | 330.39  | 243.81 | 326.39 | 341.95 | 341.95 | 177.49 | 311.78 | 2083.93 | 1895.74 |
| 22    | 0        | 0.78    | 0.61   | 0.78   | 0.78   | 0.78   | 8.26   | 0.09   | 9.91    | 1.48    |
|       | 2        | 197.57  | 97.70  | 200.44 | 185.05 | 185.05 | 55.28  | 157.67 | 188.53  | 170.54  |
| 23    | 0        | 0.00    | 0.09   | 0.00   | 0.00   | 0.00   | 0.96   | 0.00   | 1.04    | 0.09    |
|       | 2        | 12.00   | 4.43   | 12.95  | 11.13  | 11.13  | 2.87   | 8.61   | 20.08   | 18.77   |
| 24    | 0        | 0.00    | 0.00   | 0.00   | 0.00   | 0.00   | 3.56   | 0.00   | 3.56    | 0.00    |
|       | 2        | 33.55   | 11.13  | 33.81  | 30.68  | 30.68  | 9.13   | 25.47  | 39.38   | 30.34   |
| 25    | 0        | 0.00    | 0.00   | 0.00   | 0.00   | 0.00   | 0.61   | 0.00   | 0.61    | 0.00    |
|       | 2        | 1.65    | 0.61   | 1.56   | 1.30   | 1.30   | 0.96   | 1.30   | 6.69    | 5.48    |

H. 75-100mg seed weight seed coat

| Group |          | Group 1 |       |       |       |       |       |       | Group 2 |        |
|-------|----------|---------|-------|-------|-------|-------|-------|-------|---------|--------|
| nt    | Mismatch | CHS1    | CHS2  | CHS3  | CHS4  | CHS5  | CHS6  | CHS9  | CHS7    | CHS8   |
| 18    | 0        | 0.00    | 0.00  | 0.00  | 0.00  | 0.00  | 0.29  | 0.00  | 0.29    | 0.00   |
|       | 2        | 1.71    | 1.33  | 1.81  | 1.71  | 1.71  | 1.14  | 1.71  | 8.28    | 7.61   |
| 19    | 0        | 0.19    | 0.29  | 0.19  | 0.19  | 0.19  | 0.67  | 0.19  | 0.76    | 0.29   |
|       | 2        | 3.33    | 2.00  | 3.24  | 2.66  | 2.66  | 1.90  | 2.76  | 14.28   | 12.28  |
| 20    | 0        | 0.10    | 0.48  | 0.10  | 0.10  | 0.10  | 4.28  | 0.00  | 4.66    | 0.57   |
|       | 2        | 8.95    | 8.47  | 8.85  | 9.23  | 9.23  | 8.09  | 8.28  | 53.87   | 48.16  |
| 21    | 0        | 0.19    | 0.67  | 0.19  | 0.19  | 0.19  | 13.51 | 0.29  | 14.18   | 1.14   |
|       | 2        | 44.54   | 37.31 | 43.87 | 46.06 | 46.06 | 29.98 | 42.26 | 460.44  | 436.45 |
| 22    | 0        | 0.00    | 0.38  | 0.00  | 0.00  | 0.00  | 1.52  | 0.00  | 1.90    | 0.38   |
|       | 2        | 22.94   | 13.23 | 23.41 | 21.41 | 21.41 | 9.33  | 19.51 | 31.79   | 29.12  |
| 23    | 0        | 0.00    | 0.00  | 0.00  | 0.00  | 0.00  | 0.29  | 0.00  | 0.29    | 0.00   |
|       | 2        | 1.24    | 0.38  | 1.52  | 1.43  | 1.43  | 0.57  | 1.14  | 6.47    | 6.00   |
| 24    | 0        | 0.00    | 0.00  | 0.00  | 0.00  | 0.00  | 0.38  | 0.00  | 0.38    | 0.00   |
|       | 2        | 4.76    | 2.09  | 5.04  | 5.33  | 5.33  | 1.43  | 4.76  | 10.18   | 8.18   |
| 25    | 0        | 0.00    | 0.00  | 0.00  | 0.00  | 0.00  | 0.19  | 0.00  | 0.19    | 0.00   |
|       | 2        | 0.57    | 0.38  | 0.86  | 0.38  | 0.38  | 0.48  | 0.38  | 2.00    | 1.33   |

I. 200-300mg seed weight seed coat

| Group |          | Group 1 |      |      |      |      |      |      | Group 2 |        |
|-------|----------|---------|------|------|------|------|------|------|---------|--------|
| nt    | Mismatch | CHS1    | CHS2 | CHS3 | CHS4 | CHS5 | CHS6 | CHS9 | CHS7    | CHS8   |
| 18    | 0        | 0.07    | 0.00 | 0.07 | 0.07 | 0.07 | 0.13 | 0.00 | 0.13    | 0.07   |
|       | 2        | 0.20    | 0.07 | 0.20 | 0.20 | 0.20 | 0.13 | 0.13 | 2.15    | 1.75   |
| 19    | 0        | 0.07    | 0.00 | 0.07 | 0.07 | 0.07 | 0.34 | 0.00 | 0.40    | 0.13   |
|       | 2        | 0.13    | 0.07 | 0.13 | 0.20 | 0.20 | 0.40 | 0.13 | 3.64    | 3.03   |
| 20    | 0        | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.94 | 0.00 | 0.94    | 0.00   |
|       | 2        | 0.88    | 0.61 | 0.74 | 0.61 | 0.61 | 1.08 | 0.54 | 8.15    | 6.13   |
| 21    | 0        | 0.00    | 0.47 | 0.00 | 0.00 | 0.00 | 5.52 | 0.00 | 5.99    | 0.47   |
|       | 2        | 6.46    | 7.88 | 6.46 | 7.20 | 7.20 | 7.47 | 7.07 | 151.33  | 129.99 |
| 22    | 0        | 0.07    | 0.00 | 0.07 | 0.07 | 0.07 | 0.20 | 0.00 | 0.20    | 0.07   |
|       | 2        | 4.38    | 1.62 | 4.51 | 4.11 | 4.11 | 1.08 | 2.83 | 16.29   | 15.15  |
| 23    | 0        | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00   |
|       | 2        | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.15    | 1.48   |
| 24    | 0        | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00   |
|       | 2        | 1.01    | 0.13 | 0.94 | 0.94 | 0.94 | 0.07 | 0.88 | 4.04    | 2.49   |
| 25    | 0        | 0.00    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00   |
|       | 2        | 0.13    | 0.13 | 0.13 | 0.13 | 0.13 | 0.07 | 0.13 | 0.47    | 0.40   |

J. 300-400mg seed wt desiccating seed coat

| Group |          | Group 1 |       |      |      |      |      |      | Group 2 |        |
|-------|----------|---------|-------|------|------|------|------|------|---------|--------|
| nt    | Mismatch | CHS1    | CHS2  | CHS3 | CHS4 | CHS5 | CHS6 | CHS9 | CHS7    | CHS8   |
| 18    | 0        | 0.00    | 0.00  | 0.00 | 0.00 | 0.00 | 0.12 | 0.00 | 0.12    | 0.12   |
|       | 2        | 0.12    | 0.29  | 0.12 | 0.12 | 0.12 | 0.23 | 0.12 | 1.28    | 1.05   |
| 19    | 0        | 0.00    | 0.00  | 0.00 | 0.00 | 0.00 | 0.06 | 0.00 | 0.06    | 0.00   |
|       | 2        | 0.17    | 0.23  | 0.17 | 0.17 | 0.17 | 0.12 | 0.06 | 1.86    | 1.51   |
| 20    | 0        | 0.00    | 0.06  | 0.00 | 0.00 | 0.00 | 0.23 | 0.00 | 0.23    | 0.12   |
|       | 2        | 0.99    | 1.46  | 0.82 | 0.99 | 0.99 | 0.47 | 0.93 | 4.95    | 4.48   |
| 21    | 0        | 0.00    | 0.23  | 0.00 | 0.00 | 0.00 | 4.37 | 0.00 | 4.60    | 0.23   |
|       | 2        | 9.90    | 16.42 | 9.20 | 9.14 | 9.14 | 7.51 | 8.50 | 126.05  | 107.30 |
| 22    | 0        | 0.06    | 0.06  | 0.06 | 0.06 | 0.06 | 0.17 | 0.00 | 0.23    | 0.12   |
|       | 2        | 4.54    | 3.38  | 4.72 | 4.08 | 4.08 | 1.40 | 2.91 | 11.82   | 11.35  |
| 23    | 0        | 0.00    | 0.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00    | 0.00   |
|       | 2        | 0.41    | 0.06  | 0.29 | 0.41 | 0.41 | 0.00 | 0.23 | 0.93    | 0.41   |
| 24    | 0        | 0.00    | 0.00  | 0.00 | 0.00 | 0.00 | 0.06 | 0.00 | 0.06    | 0.00   |
|       | 2        | 0.41    | 0.29  | 0.41 | 0.35 | 0.35 | 0.17 | 0.29 | 1.22    | 0.52   |
| 25    | 0        | 0.00    | 0.00  | 0.00 | 0.00 | 0.00 | 0.06 | 0.00 | 0.06    | 0.00   |
|       | 2        | 0.35    | 0.06  | 0.17 | 0.06 | 0.06 | 0.06 | 0.06 | 0.52    | 0.29   |

**Table S1. Very Few *CHS* siRNAs Map with 100% Identity to Both Sub-groups of *CHS1/2/3/4/5/6/9* (Group 1) and *CHS7/8* (Group 2) Genes.** *CHS* siRNAs from small RNA libraries of the same ten developmental stages A-J as described in Figure 1 were analyzed for their size distributions between 18 and 25 nt. The normalized total counts in reads per million (RPM) are shown for each *CHS* gene. The *CHS* siRNAs that matched to a *CHS* gene within Group 1 (containing *CHS1/2/3/4/5/6/9*) were mapped to Group 2 targets containing *CHS7* and *CHS8* using Bowtie alignments and allowing no mismatches (unshaded line) or up to two mismatches (shaded line). Likewise, Group 2 *CHS* siRNAs that matched *CHS7* and *CHS8* were aligned to Group 1 targets (*CHS1/2/3/4/5/6/9*) allowing either zero or up to two mismatches. These data show that very few *CHS* siRNA were due to multi-matching siRNAs between the two groups when no mismatches are allowed but that significant numbers were multi-matching if up to 2 mismatches were allowed. Thus, imposing 100% identity enables the opportunity to distinguish *CHS1/3/4* primary siRNAs originating from the *CHS1-3-4* clusters at the *I* locus from the target *CHS7/8* secondary siRNAs.