

**Table S1.** The WheatME core-collection lines.

| <b>Genotype</b>  | <b>Source</b> | <b>Type</b>        | <b>species</b>           | <b>A1<sup>a</sup></b> | <b>A2</b> |
|------------------|---------------|--------------------|--------------------------|-----------------------|-----------|
| Ayalon           | Israel        | Modern             | <i>Triticum durum</i>    | 3.401233              | -0.85401  |
| C-9              | Israel        | Modern             | <i>Triticum durum</i>    | -0.50215              | 0.584491  |
| Eliav            | Israel        | Modern             | <i>Triticum durum</i>    | 2.808387              | -4.22914  |
| Gvati            | Israel        | Modern             | <i>Triticum durum</i>    | 2.865183              | -4.88576  |
| Inbar            | Israel        | Modern             | <i>Triticum durum</i>    | 3.855639              | -3.83235  |
| Simhon           | Israel        | Modern             | <i>Triticum durum</i>    | 4.247268              | 7.98548   |
| Uzan             | Israel        | Modern             | <i>Triticum durum</i>    | 3.124305              | -2.99939  |
| 8238             | Israel        | Landrace           | <i>Triticum durum</i>    | 2.858216              | -0.42518  |
| 393              | Israel        | Landrace           | <i>Triticum durum</i>    | -0.91093              | 4.031195  |
| Abu Fashi        | Israel        | Landrace           | <i>Triticum durum</i>    | -7.21452              | -0.8243   |
| Etith            | Israel        | Landrace           | <i>Triticum durum</i>    | -7.33864              | 0.416468  |
| Gaza             | Israel        | Landrace           | <i>Triticum durum</i>    | 2.733698              | 8.017844  |
| Zenati Bouteille | Israel        | Landrace           | <i>Triticum durum</i>    | 1.544676              | -1.47827  |
| Zoghbiyeh Safra  | Israel        | Landrace           | <i>Triticum durum</i>    | -                     | -         |
| Svevo            | Italy         | Modern             | <i>Triticum durum</i>    | 3.52917               | -1.59908  |
| Acsad 65         | Jordan        | Modern             | <i>Triticum durum</i>    | 3.907483              | -3.38358  |
| Amoon            | Jordan        | Modern             | <i>Triticum durum</i>    | 1.677364              | 10.28618  |
| Cham             | Jordan        | Landrace           | <i>Triticum durum</i>    | -1.67933              | 1.039153  |
| Dair Alla 6      | Jordan        | Landrace           | <i>Triticum durum</i>    | -                     | -         |
| Hurani           | Jordan        | Landrace           | <i>Triticum durum</i>    | -7.47565              | 0.818336  |
| Um Qais          | Jordan        | Landrace           | <i>Triticum durum</i>    | 2.443266              | -2.1211   |
| Dibieh           | Palestine     | Landrace           | <i>Triticum durum</i>    | -7.34126              | -0.78225  |
| Hittia Bida      | Palestine     | Landrace           | <i>Triticum durum</i>    | -6.43315              | -0.42732  |
| Hittia Safra     | Palestine     | Landrace           | <i>Triticum durum</i>    | 2.373079              | -3.46248  |
| Hittia Soada     | Palestine     | Landrace           | <i>Triticum durum</i>    | -1.24575              | -0.76311  |
| Kahatat          | Palestine     | Landrace           | <i>Triticum durum</i>    | -7.34126              | -0.78225  |
| Kohleh           | Palestine     | Modern             | <i>Triticum durum</i>    | 5.024171              | -2.83662  |
| Nab Eljamal      | Palestine     | Landrace           | <i>Triticum durum</i>    | 1.013419              | -2.45874  |
| Norasi           | Palestine     | Modern             | <i>Triticum durum</i>    | 0.550689              | -2.25026  |
| 8                | Palestine     | Landrace           | <i>Triticum durum</i>    | -7.33604              | 0.3586    |
| Souri            | Palestine     | Modern             | <i>Triticum durum</i>    | 5.09175               | -2.82346  |
| 390              | Palestine     | Landrace           | <i>Triticum durum</i>    | 1.371714              | -0.7777   |
| 391              | Palestine     | Landrace           | <i>Triticum durum</i>    | -3.21036              | -0.34872  |
| Dickinson 485    | Palestine     | Reference Landrace | <i>Triticum aestivum</i> | 2.21299               | 6.784285  |
| Palestine 1      | Palestine     | Reference Landrace | <i>Triticum aestivum</i> | 5.115108              | 5.007682  |
| Palestine 3      | Palestine     | Landrace           | <i>Triticum durum</i>    | -3.71977              | -0.98466  |

<sup>a</sup>PCoA coordination, see figure 2. Two lines were not included in the genetic analysis due to missing data.

**Table S2.** Location, Elevation and climatic data of the three locations in 2015-16 season.

| Environment | Country   | Lat\Long    | Elevation<br>(m) | Annual<br>rainfall<br>(mm) | Min.<br>Temp.<br>January<br>(°C) | Max.<br>Temp.<br>January<br>(°C) | Soil type           |
|-------------|-----------|-------------|------------------|----------------------------|----------------------------------|----------------------------------|---------------------|
| Til         | Palestine | 32.19/35.20 | 620              | 500                        | 6.9                              | 14.4                             | Pale-<br>Rendzinas  |
| Bet Dagan   | Israel    | 31.59/34.49 | 40               | 360                        | 2.8                              | 20.3                             | Rhodoxeralf<br>soil |
| Irbid       | Jordan    | 32.60/35.90 | 620              | 315                        | 3.7                              | 13.7                             | Silty clay          |

**Table S3.** List of 94 KASP markers used for genotyping in this study indicating the informative markers.

| Marker code | Informative (+),<br>Non-informative (-) | Marker code | Informative (+),<br>Non-informative (-) | Marker code | Informative (+), Non-<br>informative (-) |
|-------------|-----------------------------------------|-------------|-----------------------------------------|-------------|------------------------------------------|
| Rht1        | +                                       | BS00022842  | +                                       | BS00078324  | +                                        |
| BS00003592  | +                                       | BA00076109  | +                                       | BS00045316  | +                                        |
| BS00003760  | +                                       | BS00022991  | +                                       | BS00034254  | +                                        |
| BS00004224  | +                                       | BS00023008  | +                                       | BS00081841  | +                                        |
| BS00009531  | +                                       | BS00023055  | +                                       | BS00023234  | +                                        |
| BS00009992  | +                                       | BS00023086  | +                                       | BS00024126  | +                                        |
| BS00012480  | -                                       | BS00023197  | +                                       | WSNP1Cad    | +                                        |
| BS00012549  | +                                       | BS00023431  | +                                       | Cre8        | +                                        |
| BS00011298  | +                                       | BS00081630  | -                                       |             |                                          |
| BS00010993  | +                                       | BS00083385  | +                                       |             |                                          |
| BS00010167  | +                                       | BS00033284  | +                                       |             |                                          |
| BS00011929  | +                                       | BS00091167  | -                                       |             |                                          |
| BS00011148  | +                                       | BS00040283  | +                                       |             |                                          |
| BS00011711  | -                                       | BS00040635  | +                                       |             |                                          |
| BS00012072  | +                                       | BS00094998  | +                                       |             |                                          |
| BS00012117  | +                                       | BS00050047  | +                                       |             |                                          |
| BS00011231  | +                                       | BS00056232  | +                                       |             |                                          |
| BS00011709  | +                                       | BS00063822  | +                                       |             |                                          |
| BS00021692  | +                                       | BS00065075  | +                                       |             |                                          |
| BS00021710  | +                                       | BS00065607  | +                                       |             |                                          |
| BS00021722  | +                                       | BS00065863  | +                                       |             |                                          |
| BS00021736  | +                                       | BS00067585  | +                                       |             |                                          |
| BS00014588  | +                                       | BS00072754  | +                                       |             |                                          |
| BS00015136  | +                                       | BS00074083  | +                                       |             |                                          |
| BS00022028  | +                                       | BS00075406  | -                                       |             |                                          |
| BS00022061  | -                                       | BS00077433  | +                                       |             |                                          |
| BS00022070  | +                                       | BS00077891  | +                                       |             |                                          |
| BS00022091  | +                                       | BS00031200  | +                                       |             |                                          |
| BS00022106  | +                                       | BS00099364  | +                                       |             |                                          |
| BS00022144  | +                                       | BS00089166  | -                                       |             |                                          |
| BS00022145  | +                                       | BS00039009  | +                                       |             |                                          |
| BS00022332  | +                                       | BS00039925  | +                                       |             |                                          |
| BS00022338  | +                                       | BS00046292  | +                                       |             |                                          |
| BS00022342  | +                                       | BS00048896  | +                                       |             |                                          |
| BS00022363  | -                                       | BS00103478  | +                                       |             |                                          |
| BS00022422  | +                                       | BS00107766  | +                                       |             |                                          |
| BS00022474  | +                                       | BS00064979  | +                                       |             |                                          |
| BS00022490  | -                                       | BS00066274  | +                                       |             |                                          |
| BS00022652  | -                                       | BS00066564  | +                                       |             |                                          |
| BS00022653  | +                                       | BS00067189  | +                                       |             |                                          |
| BS00022673  | +                                       | BS00067388  | +                                       |             |                                          |
| BS00022703  | +                                       | BS00075108  | +                                       |             |                                          |
| BS00022808  | -                                       | BS00077990  | +                                       |             |                                          |