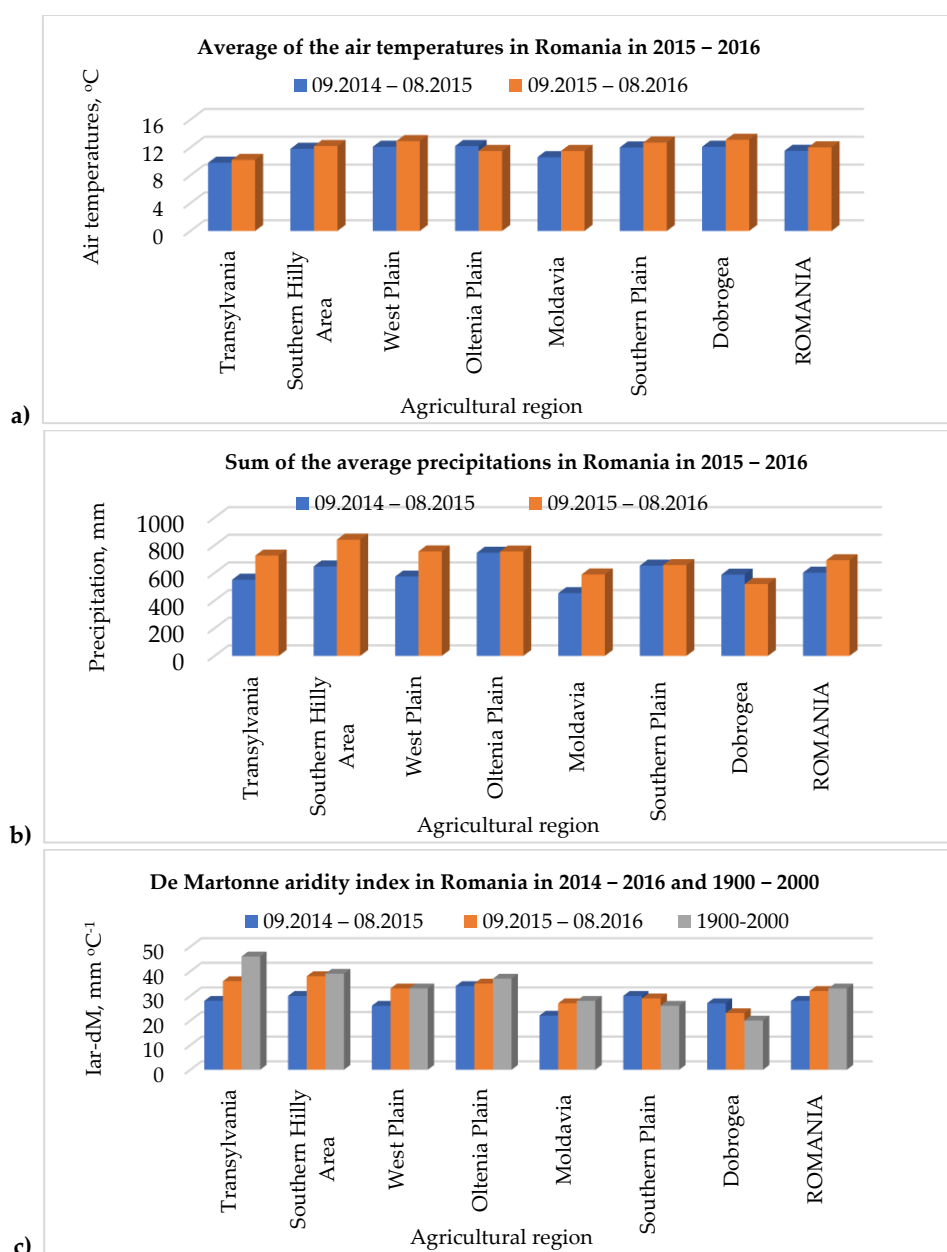


# Supplementary Materials: Assessment of *Fusarium*-Damaged Kernels in Common Wheat in Romania in the Years 2015 and 2016 with Extreme Weather Events

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**Note:** An agricultural year is defined to start on 01 September and end on 31 August of the subsequent calendar year.



**Figure S1.** Agrometeorological factors in agricultural regions in Romania in 2015 and 2016. Average of the air temperatures (a), Sum of the average precipitations (b), de Martonne aridity index,  $I_{ar-dM}$  (c).

**Table S1.** *Fusarium*–damaged kernels (FDKs) in common wheat by geographic coordinates, soil type, historical aridity indices and county in Romania in 2015 and 2016.

| County,<br>Agricultural<br>Region | Geographic Coordinates,<br>degrees |                  | Aridity Indices,<br>in 1900–2000 |                             | Soil | <i>Fusarium</i> –Damaged Kernels (FDKs) in Common Wheat by Geographic Coordinates, Soil, Historical<br>Aridity Indices and County in Romania in 2015 and 2016 |           |           |   |                              |           |          |   |
|-----------------------------------|------------------------------------|------------------|----------------------------------|-----------------------------|------|---|-----------|-----------|---|------------------------------|-----------|----------|---|
|                                   |                                    |                  |                                  |                             |      | 2015  |           |           |   | 2016                         |           |          |   |
|                                   | Latitude,<br>°N                    | Longitude,<br>°E | Iar-dM,<br>mm °C <sup>-1</sup>   | CWD,<br>mm H <sub>2</sub> O |      | No. of Samples,<br>Incidence  |           |           | Interval of FDKs<br>in Common Wheat,<br>Mean ± SD (Median), % | No. of Samples,<br>Incidence |           |          | Interval of FDKs<br>in Common Wheat,<br>Mean ± SD (Median), % |
|                                   |                                    |                  |                                  |                             |      | Total   | ≥0.01%    | ≥1%       |   | Total                        | ≥0.01%    | ≥1%      |   |
| Maramureș                         | 47.44                              | 24.00            | 50                               | 0                           | Lu   | 4   | 4         | 2         | 0.00 – 2.36<br>1.11 ± 1.26 (1.04)                             | 4                            | 4         | 3        | 0.69 – 2.65<br>1.57 ± 0.81 (1.47)                             |
| Bistrița-Năsăud                   | 47.14                              | 24.50            | 60                               | 0                           | Lu   | 5   | 5         | 3         | 0.48 – 4.05<br>1.47 ± 1.48 (1.14)                             | 7                            | 7         | 3        | 0.20 – 2.06<br>1.04 ± 0.63 (0.89)                             |
| Sălaj                             | 47.12                              | 23.30            | 50                               | 0                           | Lu   | 5   | 3         | 2         | 0.00 – 6.33<br>1.61 ± 2.74 (0.33)                             | 5                            | 5         | 1        | 0.12 – 2.80<br>0.85 ± 1.11 (0.49)                             |
| Mureș                             | 46.59                              | 24.61            | 40                               | –100                        | Ph   | 6   | 6         | 2         | 0.02 – 21.8<br>4.21 ± 8.66 (0.56)                             | 6                            | 5         | 0        | 0.12 – 0.56<br>0.25 ± 0.18 (0.17)                             |
| Harghita                          | 46.36                              | 25.80            | 60                               | 0                           | Lu   | -   |           | -         | -   | 2                            | 1         | 0        | 0.00 – 0.43<br>0.22   |
| Covasna                           | 45.50                              | 26.11            | 60                               | 0                           | Lu   | 2   | 2         | 0         | 0.16 – 0.21<br>0.19   | 2                            | 2         | 0        | 0.38 – 0.39<br>0.39   |
| Brașov                            | 45.79                              | 25.28            | 50                               | 0                           | Lu   | 2   | 1         | 0         | 0.00 – 0.38<br>0.19   | 2                            | 2         | 0        | 0.31 – 0.66<br>0.49   |
| Sibiu                             | 45.87                              | 24.23            | 40                               | 0                           | Lu   | 3   | 3         | 1         | 0.04 – 1.74<br>0.70 ± 0.91 (0.32)                             | 3                            | 3         | 0        | 0.13 – 0.81<br>0.54 ± 0.36 (0.67)                             |
| Alba                              | 46.13                              | 23.53            | 30                               | –100                        | Lu   | -   | -         | -         | -   | 2                            | 2         | 0        | 0.31 – 0.76<br>0.54   |
| Cluj                              | 46.43                              | 23.32            | 30                               | –100                        | Ph   | 2   | 2         | 0         | 0.07 – 0.27<br>0.17   | 2                            | 2         | 1        | 0.04 – 4.92<br>2.48   |
| Hunedoara                         | 45.78                              | 22.93            | 40                               | –50                         | Lu   | 2   | 1         | 0         | 0.00 – 0.03<br>0.   | 2                            | 2         | 1        | 0.22 – 1.43<br>0.82   |
| Transylvania                      | 45.50 – 47.44                      | 22.93 – 26.11    | 30 – 60                          | –100 – 0                    |      | 32  | 27<br>84% | 10<br>31% | 0.00 – 21.84<br>2.23 ± 5.40 (0.38)                            | 37                           | 35<br>95% | 9<br>24% | 0.04 – 4.92<br>0.87 ± 0.99 (0.66)                             |
| Buzău                             | 45.27                              | 26.77            | 30                               | –200                        | Ch   | 3   | 0         | 0         | 0.00  | 4                            | 3         | 0        | 0.04 – 0.07<br>0.06 ± 0.02 (0.06)                             |
| Prahova                           | 45.10                              | 26.02            | 30                               | –100                        | Lu   | 1   | 0         | 0         | 0.00  | 5                            | 4         | 0        | 0.06 – 0.50<br>0.19 ± 0.21 (0.10)                             |
| Dâmbovița                         | 44.89                              | 25.47            | 40                               | –100                        | Lu   | 5   | 0         | 0         | 0.00  | 10                           | 10        | 0        | 0.06 – 0.93   |

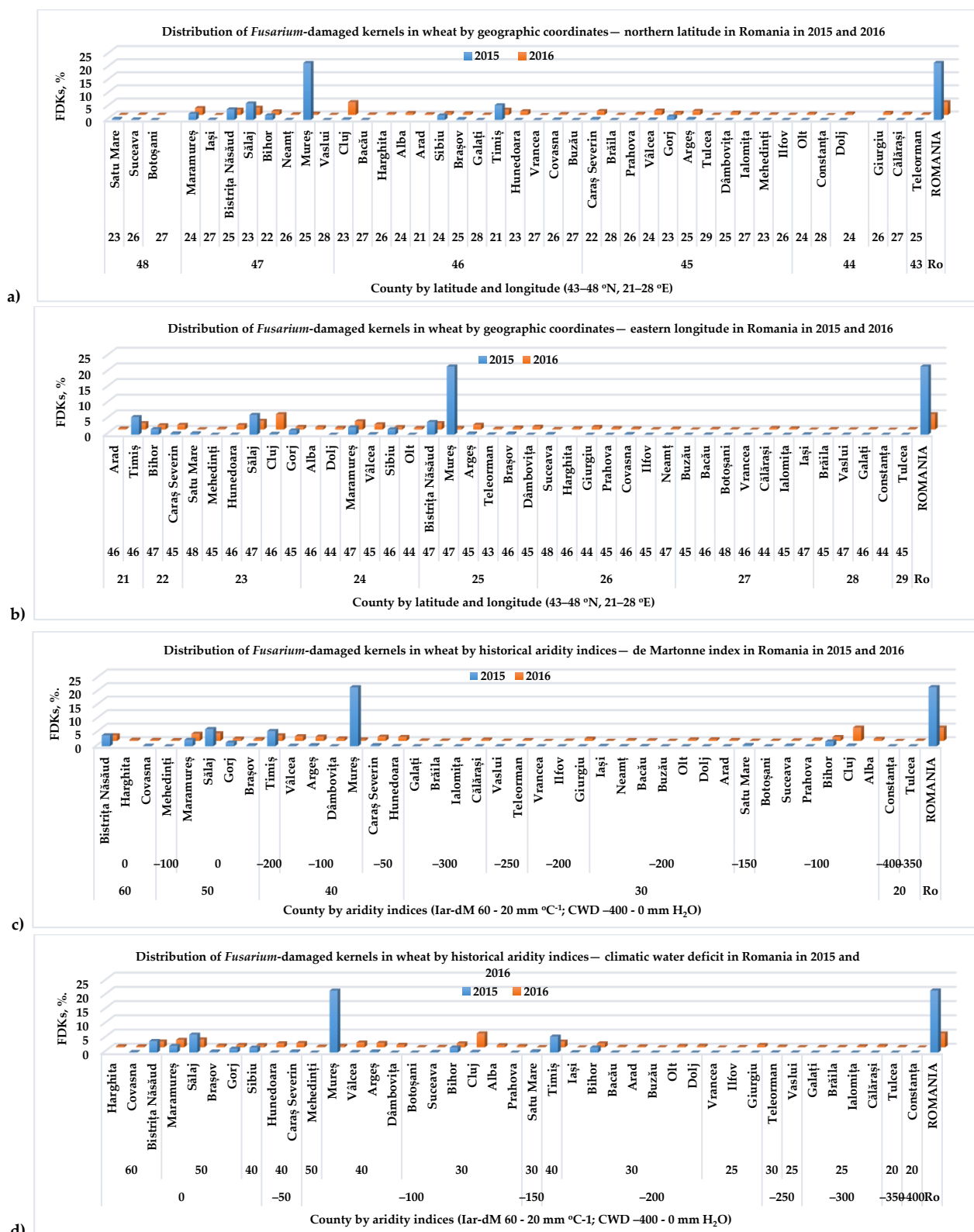
|                            |                      |                      |                |                    |    |           |                         |                        |   |           |                         |                        |   |
|----------------------------|----------------------|----------------------|----------------|--------------------|----|-----------|-------------------------|------------------------|---|-----------|-------------------------|------------------------|---|
|                            |                      |                      |                |                    |    |           |                         |                        |   |           |                         |                        | 0.21 ± 0.27 (0.10)                              |
| Argeş                      | 45.00                | 24.82                | 40             | −100               | Lu | 14        | 5                       | 0                      | 0.00 – 0.39<br>0.08 ± 0.14 (0.00)               | 6         | 6                       | 1                      | 0.11 – 1.56<br>0.48 ± 0.57 (0.18)               |
| Vâlcea                     | 45.08                | 24.11                | 40             | −100               | Lu | 5         | 3                       | 0                      | 0.00 – 0.19<br>0.09 ± 0.09 (0.08)               | 5         | 5                       | 1                      | 0.06 – 1.70<br>0.64 ± 0.69 (0.27)               |
| Gorj                       | 45.04                | 23.30                | 50             | 0                  | Lu | 3         | 3                       | 1                      | 0.18 – 1.37<br>0.59 ± 0.68 (0.22)               | 2         | 2                       | 0                      | 0.26 – 0.85<br>0.56                             |
| Caraş-Severin              | 45.15                | 22.07                | 40             | −50                | Lu | 3         | 2                       | 0                      | 0.00 – 0.40<br>0.14                             | 3         | 2                       | 1                      | 0.03 – 1.53<br>0.72 ± 0.76 (0.61)               |
| <b>Southern Hilly Area</b> | <b>44.89 – 45.27</b> | <b>22.07 – 26.77</b> | <b>30 – 50</b> | <b>−200 – 0</b>    |    | <b>34</b> | <b>13</b><br><b>38%</b> | <b>1</b><br><b>3%</b>  | <b>0.00 – 1.37</b><br><b>0.11 ± 0.25 (0.00)</b> | <b>35</b> | <b>32</b><br><b>91%</b> | <b>3</b><br><b>9%</b>  | <b>0.03 – 1.70</b><br><b>0.38 ± 0.47 (0.17)</b> |
| Timiș                      | 45.78                | 21.35                | 40             | −200               | Ch | 29        | 17                      | 6                      | 0.00 – 5.63<br>0.88 ± 1.28 (0.11)               | 10        | 10                      | 4                      | 0.16 – 2.04<br>0.87 ± 0.58 (0.78)               |
| Arad                       | 46.10                | 21.08                | 30             | −200               | Ch | -         |                         | -                      | -   | 2         | 2                       | 0                      | 0.03 – 0.35<br>0.19                             |
| Bihor                      | 47.07                | 21.92                | 30             | −100               | Lu | 5         | 5                       | 1                      | 0.11 – 1.79<br>0.58 ± 0.70 (0.30)               | 5         | 4                       | 1                      | 0.18 – 1.41<br>0.62 ± 0.58 (0.46)               |
| Satu-Mare                  | 47.69                | 22.89                | 30             | −150               | Lu | 3         | 2                       | 0                      | 0.00 – 0.45<br>0.23 ± 0.23 (0.25)               | 3         | 3                       | 0                      | 0.02 – 0.11<br>0.08 ± 0.05 (0.11)               |
| <b>West Plain</b>          | <b>45.78 – 47.69</b> | <b>21.08 – 22.89</b> | <b>30 – 40</b> | <b>−200 – −100</b> |    | <b>37</b> | <b>24</b><br><b>65%</b> | <b>7</b><br><b>19%</b> | <b>0.00 – 3.08</b><br><b>0.21 ± 0.58 (0.00)</b> | <b>20</b> | <b>19</b><br><b>95%</b> | <b>5</b><br><b>14%</b> | <b>0.02 – 2.04</b><br><b>0.62 ± 0.58 (0.43)</b> |
| Mehedinți                  | 44.63                | 22.88                | 50             | −100               | Lu | 1         | 0                       | 0                      | 0.00  | 2         | 2                       | 0                      | 0.28 – 0.29<br>0.28                             |
| Dolj                       | 44.17                | 23.70                | 30             | −200               | Ch | 4         | 3                       | 0                      | 0.00 – 0.20                                     | 4         | 1                       | 0                      | 0.00 – 0.58<br>0.14 ± 0.29 (0.00)               |
| Olt                        | 44.43                | 24.37                | 30             | −200               | Ph | 4         | 3                       | 0                      | 0.00 – 0.21                                     | 4         | 4                       | 0                      | 0.06 – 0.54<br>0.30 ± 0.20 (0.31)               |
| <b>Oltenia Plain</b>       | <b>44.17 – 44.63</b> | <b>22.88 – 24.37</b> | <b>30 – 50</b> | <b>−200 – −100</b> |    | <b>9</b>  | <b>6</b><br><b>67%</b>  | <b>0</b><br><b>0%</b>  | <b>0.00 – 0.21</b><br><b>0.10 ± 0.09 (0.11)</b> | <b>10</b> | <b>7</b><br><b>70%</b>  | <b>0</b><br><b>0%</b>  | <b>0.07 – 0.52</b><br><b>0.25 ± 0.18 (0.21)</b> |
| Botoșani                   | 47.84                | 26.82                | 30             | −100               | Ch | 1         | 0                       | 0                      | 0.00  | 2         | 2                       | 0                      | 0.06 – 0.11<br>0.09                             |
| Suceava                    | 47.58                | 25.76                | 30             | −100               | Lu | 2         | 1                       | 0                      | 0.00 – 0.22<br>0.11                             | 2         | 2                       | 0                      | 0.03 – 0.20<br>0.11                             |
| Iași                       | 47.25                | 27.31                | 30             | −200               | Ch | 1         | 1                       | 0                      | 0.13  | 2         | 2                       | 0                      | 0.02 – 0.03<br>0.03                             |
| Neamț                      | 46.97                | 26.40                | 30             | −200               | Lu | 1         | 1                       | 0                      | 0.04  | 2         | 1                       | 0                      | 0.00 – 0.31<br>0.15                             |

|                       |                      |                      |                |                    |    |            |                         |                         |  |            |                          |                         |   |
|-----------------------|----------------------|----------------------|----------------|--------------------|----|------------|-------------------------|-------------------------|--|------------|--------------------------|-------------------------|---|
| Vaslui                | 46.59                | 27.77                | 25             | −250               | Ch | 2          | 1                       | 0                       | 0.00 – 0.03<br>0.02                              | 2          | 2                        | 0                       | 0.02 – 0.10<br>0.06                             |
| Bacău                 | 46.42                | 26.78                | 30             | −200               | Lu | 3          | 1                       | 0                       | 0.00 – 0.05<br>0.02 ± 0.03 (0.00)                | 2          | 2                        | 0                       | 0.15 – 0.24<br>0.20                             |
| Galați                | 45.79                | 27.78                | 25             | −300               | Ch | 3          | 0                       | 0                       | 0.00   | 3          | 3                        | 0                       | 0.03 – 0.16<br>0.09 ± 0.07 (0.08)               |
| Vrancea               | 45.75                | 26.97                | 25             | −200               | Ch | 1          | 0                       | 0                       | 0.00   | 2          | 0                        | 0                       | 0.00  |
| <b>Moldavia</b>       | <b>45.75 – 47.84</b> | <b>25.76 – 27.78</b> | <b>25 – 30</b> | <b>−300 – −100</b> |    | <b>14</b>  | <b>5</b><br><b>36%</b>  | <b>0</b><br><b>0%</b>   | <b>0.00 – 0.22</b><br><b>0.11 ± 0.25 (0.00)</b>  | <b>17</b>  | <b>14</b><br><b>82%</b>  | <b>0</b><br><b>0%</b>   | <b>0.02 – 0.31</b><br><b>0.11 ± 0.09 (0.09)</b> |
| Brăila                | 45.11                | 27.68                | 25             | −300               | Ch | 2          | 0                       | 0                       | 0.00   | 2          | 1                        | 0                       | 0.00 – 0.15<br>0.07                             |
| Ialomița              | 44.64                | 27.30                | 25             | −300               | Ch | 1          | 0                       | 0                       | 0.00   | 2          | 2                        | 0                       | 0.07 – 0.41<br>0.24                             |
| Ilfov                 | 44.61                | 26.12                | 25             | −200               | Lu | 1          | 0                       | 0                       | 0.00   | 2          | 2                        | 0                       | 0.08 – 0.14<br>0.11                             |
| Teleorman             | 43.39                | 25.21                | 30             | −250               | Ch | 1          | 1                       | 0                       | 0.08   | 2          | 1                        | 0                       | 0.00 – 0.31<br>0.16                             |
| Giurgiu               | 44.16                | 25.90                | 25             | −200               | Ch | 1          | 0                       | 0                       | 0.00   | 2          | 2                        | 0                       | 0.15 – 0.85<br>0.50                             |
| Călărași              | 44.12                | 27.20                | 25             | −300               | Ch | 1          | 0                       | 0                       | 0.00   | 4          | 2                        | 0                       | 0.11 – 0.52<br>0.31 ± 0.29 (0.31)               |
| <b>Southern Plain</b> | <b>43.39 – 45.11</b> | <b>25.21 – 27.68</b> | <b>25 – 30</b> | <b>−300 – −200</b> |    | <b>7</b>   | <b>1</b>                | <b>0</b>                | <b>0.00 – 0.08</b><br><b>0.01 ± 0.03 (0.00)</b>  | <b>14</b>  | <b>10</b>                | <b>0</b>                | <b>0.00 – 0.85</b><br><b>0.20 ± 0.25 (0.12)</b> |
| Tulcea                | 44.98                | 28.77                | 20             | −350               | Ch | 1          | 0                       | 0                       | 0.00   | 2          | 2                        | 0                       | 0.08 – 0.15<br>0.11                             |
| Constanța             | 44.27                | 28.31                | 20             | −400               | Ch | 1          | 0                       | 0                       | 0.00   | 2          | 0                        | 0                       | 0.00  |
| <b>Dobrogea</b>       | <b>44.27 – 44.98</b> | <b>28.31 – 28.77</b> | <b>20</b>      | <b>−400 – −350</b> |    | <b>2</b>   | <b>0</b>                | <b>0</b>                | <b>0.00</b>                                      | <b>4</b>   | <b>2</b>                 | <b>0</b>                | <b>0.00 – 0.15</b><br><b>0.06 ± 0.07 (0.04)</b> |
| <b>ROMANIA</b>        | <b>43.39 – 47.84</b> | <b>21.08 – 28.77</b> | <b>20 – 60</b> | <b>−400 – 0</b>    |    | <b>135</b> | <b>76</b><br><b>56%</b> | <b>18</b><br><b>13%</b> | <b>0.00 – 21.84</b><br><b>0.45 ± 2.03 (0.00)</b> | <b>137</b> | <b>119</b><br><b>87%</b> | <b>17</b><br><b>12%</b> | <b>0.00 – 4.92</b><br><b>0.82 ± 0.98 (0.50)</b> |

Climate type by agricultural region and aridity indices (Iar-dM and CWD) in 1900–2000: Humid climate in Transylvania; Humid-balanced climate in Southern Hilly Area; Sub-humid climate in Oltenia Plain and the West Plain; Semi-arid climate in Moldavia and the Southern Plain; Arid climate in Dobrogea [133].

Soil type (scale 1:1,500,000): Ch— chernozem; Lu— luvisol; Ph—phaeozem [11,12].

Maximum limit of *Fusarium*-damaged kernels in common wheat is 1% [78].



**Figure S2.** Spatial and geographic distribution of maximum values of *Fusarium*-damaged kernels (FDKs) in common wheat in Romania in 2015 and 2016, by: (a, b) geographic coordinates — Northern latitude, °N and Eastern longitude, °E; (c, d) historical aridity indices in 1900–2000 — de Martonne aridity index, Iar-dM and climatic water deficit, CWD.

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**Table S2.** Maximum level of *Fusarium*-damaged kernels (FDKs) in common wheat by geographic position (agricultural region, geographic coordinates, county and locality), aridity indices (de Martonne, Iar-dM; climatic water deficit, CWD), hydrographic basin and wheat variety in Romania in 2015 and 2016.



| Year                | Geographic Coordinates |              |               | Aridity Indices, in 1900–2000 |                             |                          | Locality         | Soil                    | Hydrographic Basin | Common Wheat Variety | FDKs %, in 2015–2016 | Precipitation, mm |       |       | Air Temperature, °C |      |               | Meteo Station        |                |      |      |      |      |                      |
|---------------------|------------------------|--------------|---------------|-------------------------------|-----------------------------|--------------------------|------------------|-------------------------|--------------------|----------------------|----------------------|-------------------|-------|-------|---------------------|------|---------------|----------------------|----------------|------|------|------|------|----------------------|
|                     | Agricultural Region    | Latitude, °N | Longitude, °E | County                        | Iar-dM, mm °C <sup>-1</sup> | CWD, mm H <sub>2</sub> O |                  |                         |                    |                      |                      | May               | June  | July  | May                 | June | July          |                      |                |      |      |      |      |                      |
|                     |                        |              |               |                               |                             |                          |                  |                         |                    |                      |                      |                   |       |       |                     |      |               |                      |                |      |      |      |      |                      |
| 2015                | Transylvania           | 47           | 24            | Bistrița-Năsăud, BN           | 60                          |                          | Șieu-Măgheruș    | Lu                      | Șieu x Dipșa       | Andrada              | 1.14                 | 113.8             | 84.4  | 41.6  | 15.7                | 19.2 | 21.7          | Bistrița, BN         |                |      |      |      |      |                      |
| Sîngeorzu-Nou       |                        |              |               | Someșu Mare                   |                             |                          |                  |                         | 4.05               |                      |                      |                   |       |       |                     |      |               |                      |                |      |      |      |      |                      |
| Maramureș, MM       |                        |              |               | 50                            | 0                           | Șomcuta Mare             |                  | Bârsău (trib. of Someș) | Arieșan            | 2.02                 | 97.8                 | 58.2              | 23.6  | 16.0  | 20.1                | 22.7 | Baia-Mare, MS |                      |                |      |      |      |      |                      |
|                     |                        |              |               |                               |                             | Odești, Baia Mare        |                  | Glosa                   | 2.36               |                      |                      |                   |       |       |                     |      |               |                      |                |      |      |      |      |                      |
| Sălaj, SJ           |                        |              |               |                               |                             | Năpradea *               |                  | Someș                   | Acrotos            | 1.68                 | 132.2                | 48.4              | 38.4  | 16.0  | 20.1                | 22.9 | Zalău, SJ     |                      |                |      |      |      |      |                      |
|                     |                        |              |               |                               |                             | Măierîște                |                  | Crasna                  | Potaisa            | 6.33                 |                      |                   |       |       |                     |      |               |                      |                |      |      |      |      |                      |
| Mureș, MS           |                        | 46           |               |                               | Sâncraiu de Mureș           | 40                       | –100             | Lu-Ph                   | Mureș              | Exotic               | 21.84                | 67.6              | 127.4 | 32.1  | 16.0                | 19.1 | 22.0          | Tg, Mureș, MS        |                |      |      |      |      |                      |
|                     |                        |              |               |                               | Sânpetru de Câmpie          |                          |                  | 1.90                    |                    |                      |                      |                   |       |       |                     |      |               |                      |                |      |      |      |      |                      |
| Southern Hilly Area |                        | 45           | 24            |                               | Sibiu, SB                   | 40                       | 0                | Brăteiu                 | Lu                 | Târnava Mare         | Eder Ron             | 1.74              | 85.8  | 183.6 | 27.4                | 15.2 | 18.0          | 21.0                 | Dumbrăveni, SB |      |      |      |      |                      |
|                     |                        |              |               |                               |                             |                          |                  |                         |                    |                      |                      |                   |       |       |                     |      |               |                      |                |      |      |      |      |                      |
|                     | 45                     | 23           |               | Gorj, GJ                      | 50                          | 0                        | Drăguțești       | Lu                      | Jiu                | Other                | 1.37                 | 35.2              | 34.0  | 38.8  | 18.0                | 20.9 | 25.4          | Tg. Jiu, GJ          |                |      |      |      |      |                      |
|                     |                        |              |               |                               |                             |                          |                  |                         |                    |                      |                      |                   |       |       |                     |      |               |                      |                |      |      |      |      |                      |
|                     | 47                     |              |               | Bihor, BH                     | 30                          | –100                     | Șimian           | Lu                      | -                  | Exotic               | 1.79                 | 79.0              | 34.9  | 24.2  | 16.7                | 20.5 | 24.1          | Săcuieni, BH         |                |      |      |      |      |                      |
|                     |                        |              |               |                               |                             |                          |                  |                         |                    |                      |                      |                   |       |       |                     |      |               |                      |                |      |      |      |      |                      |
| West Pain           | 45                     | 21           |               | Timiș, TM                     | 40                          | –200                     | Lovrin           | Ch                      | -                  | Crișana              | 5.63                 | 71.3              | 6.5   | 95.5  | 17.6                | 21.4 | 25.0          | Sânnicolaul Mare, TM |                |      |      |      |      |                      |
|                     |                        |              |               |                               |                             |                          | Sânnicolaul Mare |                         |                    | Altigo               | 3.08                 |                   |       |       |                     |      |               |                      |                |      |      |      |      |                      |
|                     |                        |              |               |                               |                             |                          | -                |                         | Franz Iosef        | 1.34                 |                      |                   |       |       |                     |      |               |                      |                |      |      |      |      |                      |
|                     |                        |              |               |                               |                             |                          |                  |                         |                    |                      |                      |                   |       |       |                     |      |               |                      |                |      |      |      |      |                      |
|                     |                        |              |               |                               |                             |                          | Buziaș           |                         | Șurgani            | Soisson              | 1.25                 |                   |       |       |                     |      |               | 38.6                 | 46.0           | 6.4  | 17.2 | 20.6 | 24.3 | Lugoj, TM            |
|                     |                        |              |               |                               |                             |                          | Comloșu Mare     |                         | -                  | Midas                | 1.79                 |                   |       |       |                     |      |               | 71.3                 | 6.5            | 95.5 | 17.6 | 21.4 | 25.0 | Sânnicolaul Mare, TM |
| Cărpiniș            | -                      | Arnold       | 3.21          |                               |                             |                          |                  |                         |                    |                      |                      |                   |       |       |                     |      |               |                      |                |      |      |      |      |                      |

| Year | Agricultural Region | Geographic Coordinates |               | County              | Aridity Indices, in 1900–2000 |         |                  | Locality          | Soil | Hydrographic Basin         | Common Wheat Variety   | FDKs %, in 2015–2016 | Precipitation, mm |       |       | Air Temperature, °C |      |      | Meteo Station        |
|------|---------------------|------------------------|---------------|---------------------|-------------------------------|---------|------------------|-------------------|------|----------------------------|------------------------|----------------------|-------------------|-------|-------|---------------------|------|------|----------------------|
|      |                     | Latitude, °N           | Longitude, °E |                     | Iar-dM, mm °C <sup>-1</sup>   | CWD, mm | H <sub>2</sub> O |                   |      |                            |                        |                      | May               | June  | July  | May                 | June | July |                      |
| 2016 | Transylvania        | 47                     | 24            | Bistrița-Năsăud, BN | 60                            | 0       |                  | Bistrița-Năsăud   | Lu   | Bistrița                   | Arieșan                | 1.03                 | 44.2              | 117.8 | 65.0  | 14.5                | 20.4 | 21.0 | Bistrița, BN         |
|      |                     | 47                     | 24            |                     |                               |         |                  |                   |      |                            | Andrada                | 1.68                 |                   |       |       |                     |      |      |                      |
|      |                     | 47                     | 24            |                     |                               |         |                  |                   |      |                            | Other                  | 2.06                 |                   |       |       |                     |      |      |                      |
|      |                     | 47                     | 24            | Maramureș, MM       |                               |         |                  | Viile Apei, Șeini | Lu   | Someș                      | Adesso                 | 1.51                 | 68.4              | 151.8 | 91.8  | 15.3                | 20.9 | 21.6 | Baia Mare, MS        |
|      |                     | 47                     | 24            |                     |                               |         |                  | Arduzel, Ulmeni   |      |                            | Arieșan                | 1.44                 |                   |       |       |                     |      |      |                      |
|      |                     | 47                     | 24            |                     |                               |         |                  | Baia-Mare         |      |                            | Săsar (affl. of Someș) | Adesso               | 2.65              |       |       |                     |      |      |                      |
|      |                     | 47                     | 23            | Sălaj               | 50                            | 0       |                  | Măeriște          |      | Crasna                     | Arieșan                | 2.80                 | 97.2              | 137.4 | 83.8  | 15.4                | 20.5 | 21.5 | Zalău, SJ            |
|      |                     | 46                     | 23            | Cluj                | 30                            | −100    |                  | Apahida           | Ch   | -                          | Renan                  | 4.92                 | 84.2              | 113.6 | 113.4 | 13.9                | 19.7 | 20.4 | Cluj Napoca, CJ      |
|      |                     | 45                     | 22            | Hunedoara           | 40                            | −50     |                  | Peșteana          | Lu   | -                          |                        | 1.43                 | 99.0              | 208.2 | 87.6  | 15.1                | 20.5 | 21.6 | Caransebeș, CS       |
|      | Southern Hilly Area | 45                     | 22            | Caraș-Severin       |                               | −50     |                  | Măureni           |      | -                          | Arezo                  | 1.53                 | 78.1              | 180.8 | 88.4  | 15.6                | 21.2 | 22.2 | Lugoj, TM            |
|      |                     | 45                     | 24            | Vâlcea              | 40                            | −100    |                  | Diculești         | Lu   | Olteț (trib. of Olt)       | Exotic                 | 1.70                 | 78.6              | 46.6  | 28.8  | 15.3                | 21.7 | 23.8 | Drăgășani, VL        |
|      |                     | 45                     | 24            | Argeș               |                               |         |                  | Albota            |      | Teleorman (trib. of Vedea) | Trivale                | 1.56                 | 93.0              | 123.8 | 14.4  | 14.7                | 21.2 | 23.0 | Pitești, AG          |
|      | West Pain           | 47                     | 21            | Bihor               | 30                            | −100    |                  | Sânicolaul Roman  | Lu   | -                          | Florian                | 1.41                 | 46.4              | 168.1 | 85.3  | 16.4                | 21.3 | 22.5 | Oradea, BH           |
|      |                     | 45                     |               | Timiș               | 40                            | −200    |                  | Lovrin            | Ch   | -                          | Lovrin 34              | 1.13                 | 52.7              | 218.5 | 52.9  | 16.5                | 21.6 | 23.0 | Sânnicolaul Mare, TM |
|      |                     |                        |               |                     |                               |         |                  | Buziaș            |      | Șurgani                    | Bekes                  | 1.09                 | 78.1              | 180.8 | 88.4  | 15.6                | 21.2 | 22.2 | Lugoj, TM            |
|      |                     |                        |               |                     |                               |         |                  | Ciacova           |      | Timișul Mort               | Samson                 | 1.42                 |                   |       |       |                     |      |      |                      |



|          |   |        |      |      |       |      |      |      |      |                  |
|----------|---|--------|------|------|-------|------|------|------|------|------------------|
| Giarmata | - | Apache | 2.04 | 51.2 | 177.8 | 76.3 | 16.3 | 21.6 | 22.9 | Timișoara,<br>TM |
|----------|---|--------|------|------|-------|------|------|------|------|------------------|

Climate type by agricultural region and aridity indices (Iar-dM and CWD) in 1900–2000: Humid climate in Transylvania; Humid-balanced climate in Southern Hilly Area; Sub-humid climate in Oltenia Plain and the West Plain; Semi-arid climate in Moldavia and the Southern Plain; Arid climate in Dobrogea [133].

Soil type (scale 1:1,500,000): Ch— chernozem; Lu— luvisol; Ph—phaeozem [11,12].

Hydrographic Basin: trib.— tributary; affl.— affluent. The rivers of the Transylvania and West Plains regions are Tisza river' affluents, a significant affluent of the Danube River. The rivers of the Southern Hilly Area, Oltenia Plain, the Southern Plain and Moldavia regions are affluents of the Danube River.

Maximum limit of *Fusarium*-damaged kernels in common wheat is 1% [78].

**Table S3.** *Fusarium*-damaged kernels (FDKs) in common wheat by geographic coordinates—northern latitude in Romania in 2015 and 2016.

| Latitude,<br>°N | <i>Fusarium</i> -Damaged Kernels (FDKs) in Common Wheat by Geographic Coordinates—Northern Latitude in Romania in 2015 and 2016 |               |              |   |                              |               |              |   |
|-----------------|---|---------------|--------------|---|------------------------------|---------------|--------------|---|
|                 | 2015  |               |              |   | 2016                         |               |              |   |
|                 | No. of Samples;<br>Incidence  |               |              | Interval of FDKs<br>in Common Wheat,<br>Mean $\pm$ SD (Median), % | No. of Samples;<br>Incidence |               |              | Interval of FDKs<br>in Common Wheat,<br>Mean $\pm$ SD (Median), % |
|                 | Total   | $\geq 0.01\%$ | $\geq 1\%$   |   | Total                        | $\geq 0.01\%$ | $\geq 1\%$   |   |
| 43              | 1   | 1<br>100%     | 0<br>0%      | 0.08  | 2                            | 1<br>100%     | 0<br>0%      | 0.31  |
| 44              | 18  | 6<br>33.33%   | 0<br>0%      | 0.00 – 0.21<br>0.04 $\pm$ 0.08 (0.00)                             | 26                           | 22<br>84.62%  | 0<br>0%      | 0.00 – 0.93<br>0.43 $\pm$ 0.29 (0.41)                             |
| 45              | 74  | 37<br>50%     | 8<br>10.81%  | 0.00 – 5.63<br>0.74 $\pm$ 1.51 (0.20)                             | 55                           | 55<br>100%    | 8<br>14.29%  | 0.00 – 2.04<br>0.81 $\pm$ 0.67 (0.66)                             |
| 46              | 15  | 11<br>73.33%  | 2<br>13.33%  | 0.00 – 21.84<br>3.71 $\pm$ 8.88 (0.05)                            | 20                           | 20<br>100%    | 1<br>5%      | 0.10 – 4.92<br>1.05 $\pm$ 1.72 (0.43)                             |
| 47              | 27  | 21<br>77.78%  | 8<br>29.63%  | 0.00 – 6.33<br>1.92 $\pm$ 2.27 (1.12)                             | 34                           | 34<br>100%    | 8<br>23.53%  | 0.03 – 2.80<br>1.17 $\pm$ 1.21 (0.03)                             |
| Romania         | 135   | 76<br>56.30%  | 18<br>13.33% | 0.00 – 21.84<br>1.24 $\pm$ 3.70 (0.08)                            | 137                          | 137<br>100%   | 17<br>12.41% | 0.00 – 4.92<br>0.82 $\pm$ 0.98 (0.50)                             |

**Table S4.** *Fusarium*-damaged kernels (FDKs) in common wheat by geographic coordinates—eastern longitude in Romania in 2015 and 2016.

| Longitude,<br>°E | <i>Fusarium</i> -damaged kernels (FDKs) in Common Wheat by Geographic Coordinates—Eastern Longitude in Romania in 2015 and 2016 |               |             |   |                              |               |             |   |
|------------------|---|---------------|-------------|---|------------------------------|---------------|-------------|---|
|                  | 2015  |               |             |   | 2016                         |               |             |   |
|                  | No. of Samples;<br>Incidence  |               |             | Interval of FDKs<br>in Common Wheat,<br>Mean $\pm$ SD (Median), % | No. of Samples;<br>Incidence |               |             | Interval of FDKs<br>in Common Wheat,<br>Mean $\pm$ SD (Median), % |
|                  | Total   | $\geq 0.01\%$ | $\geq 1\%$  |   | Total                        | $\geq 0.01\%$ | $\geq 1\%$  |   |
| 21               | 34  | 22<br>64.71%  | 7<br>20.59% | 0.00 – 5.63<br>3.71 $\pm$ 2.72 (3.71)                             | 17                           | 17<br>100%    | 5<br>29.41% | 0.35 – 2.04<br>1.27 $\pm$ 0.85 (1.41)                             |
| 22               | 9   | 5<br>55.56%   | 0<br>0%     | 0.00 – 0.45<br>0.28 $\pm$ 0.25 (0.40)                             | 10                           | 10<br>100%    | 2<br>20%    | 0.11 – 1.43<br>0.64 $\pm$ 0.77 (0.29)                             |
| 23               | 15  | 11<br>73.33%  | 3<br>20%    | 0.00 – 6.33<br>1.37 $\pm$ 2.48 (0.24)                             | 15                           | 15<br>100%    | 2<br>14.86% | 0.58 – 4.92<br>1.89 $\pm$ 1.69 (1.14)                             |
| 24               | 41  | 29<br>70.73%  | 8<br>19.51% | 0.00 – 21.84<br>4.40 $\pm$ 7.82 (1.74)                            | 35                           | 35<br>100%    | 8<br>22.86% | 0.54 – 2.65<br>1.41 $\pm$ 0.81 (1.56)                             |
| 25               | 10  | 2<br>20%      | 0<br>0%     | 0.00 – 0.38<br>0.14 $\pm$ 0.16 (0.08)                             | 20                           | 20<br>100%    | 0<br>0%     | 0.20 – 0.93<br>0.56 $\pm$ 0.30 (0.55)                             |
| 26               | 14  | 5<br>35.71%   | 0<br>0%     | 0.00 – 0.21<br>0.04 $\pm$ 0.08 (0.00)                             | 21                           | 21<br>100%    | 0<br>0%     | 0.00 – 0.50<br>0.22 $\pm$ 0.18 (0.14)                             |

|         |     |              |              |                                    |     |             |              |                                   |
|---------|-----|--------------|--------------|------------------------------------|-----|-------------|--------------|-----------------------------------|
| 27      | 9   | 2<br>22.22%  | 0<br>0%      | 0.00 – 0.13<br>0.03 ± 0.05 (0.00)  | 11  | 11<br>100%  | 0<br>0%      | 0.03 – 0.52<br>0.23 ± 0.19 (0.16) |
| 28      | 3   | 0<br>0%      | 0<br>0%      | 0.00                               | 8   | 8<br>100%   | 0<br>0%      | 0.00 – 0.15<br>0.08 ± 0.11 (0.08) |
| Romania | 135 | 76<br>56.30% | 18<br>13.33% | 0.00 – 21.84<br>1.24 ± 3.70 (0.08) | 137 | 137<br>100% | 17<br>12.41% | 0.00 – 4.92<br>0.82 ± 0.98 (0.50) |

**Table S5.** *Fusarium*-damaged kernels (FDKs) in common wheat by soil in Romania in 2015 and 2016.

| Soil      | <i>Fusarium</i> -Damaged Kernels (FDKs) in Common Wheat by Soil in Romania in 2015 and 2016 |              |              |   |                              |             |              |   |
|-----------|---|--------------|--------------|---|------------------------------|-------------|--------------|---|
|           | 2015  |              |              |   | 2016                         |             |              |   |
|           | No. of Samples;<br>Incidence  |              |              | Interval of FDKs<br>in Common Wheat,<br>Mean ± SD (Median), % | No. of Samples;<br>Incidence |             |              | Interval of FDKs<br>in Common Wheat,<br>Mean ± SD (Median), % |
|           | Total   | ≥0.01%       | ≥1%          |   | Total                        | ≥0.01%      | ≥1%          |   |
| Chernozem | 52  | 23<br>44.23% | 6<br>11.54%  | 0.00 – 5.63<br>0.40 ± 1.45 (0.00)                             | 46                           | 46<br>100%  | 4<br>18.70%  | 0.00 – 2.04<br>0.36 ± 0.51 (0.16)                             |
| Phaeozem  | 8   | 8<br>100%    | 2<br>25%     | 0.21 – 21.84<br>7.44 ± 12.47 (0.27)                           | 6                            | 6<br>100%   | 1<br>16.66%  | 0.54 – 4.92<br>2.74 ± 2.52 (0.56)                             |
| Luvisol   | 75  | 45<br>60%    | 10<br>13.33% | 0.00 – 6.33<br>0.95 ± 1.61 (0.22)                             | 85                           | 85<br>100%  | 12<br>14.25% | 0.11 – 2.80<br>0.99 ± 0.80 (0.79)                             |
| Romania   | 135   | 76<br>56.30% | 18<br>13.33% | 0.00 – 21.84<br>1.24 ± 3.70 (0.08)                            | 137                          | 137<br>100% | 17<br>12.41% | 0.00 – 4.92<br>0.82 ± 0.98 (0.50)                             |

**Table S6.** *Fusarium*-damaged kernels (FDKs) in common wheat by aridity – de Martonne aridity index in Romania in 2015 and 2016.

| de Martonne<br>Aridity Index<br>(Iar-dM),<br>mm °C <sup>-1</sup><br>(1900–2000) | <i>Fusarium</i> -Damaged Kernels (FDKs) in Common Wheat by Aridity – de Martonne Aridity Index in Romania in 2015 and 2016 |              |             |   |                              |            |             |   |
|---|--|--------------|-------------|---|------------------------------|------------|-------------|---|
|   | 2015   |              |             |   | 2016                         |            |             |   |
|   | No. of Samples;<br>Incidence   |              |             | Interval of FDKs<br>in Common Wheat,<br>Mean ± SD (Median), % | No. of Samples;<br>Incidence |            |             | Interval of FDKs<br>in Common Wheat,<br>Mean ± SD (Median), % |
|   | Total  | ≥0.01%       | ≥1%         |   | Total                        | ≥0.01%     | ≥1%         |   |
| 20  | 2  | 0<br>0%      | 0<br>0%     | 0.00 – 0.00<br>0.00   | 4                            | 4<br>100%  | 0<br>0%     | 0.00 – 0.15<br>0.08 ± 0.11 (0.08)                             |
| 25  | 14   | 2<br>14.29%  | 0<br>0%     | 0.00 – 0.03<br>0.00 ± 0.01 (0.00)                             | 20                           | 20<br>100% | 0<br>0%     | 0.00 – 0.85<br>0.29 ± 0.28 (0.16)                             |
| 30  | 30   | 19<br>63.33% | 1<br>3.33%  | 0.00 – 1.79<br>0.25 ± 0.46 (0.11)                             | 42                           | 42<br>100% | 2<br>4.76%  | 0.03 – 4.92<br>0.70 ± 1.22 (0.31)                             |
| 40  | 69   | 39<br>56.52% | 9<br>13.04% | 0.00 – 21.84<br>3.78 ± 7.54 (0.40)                            | 49                           | 49<br>100% | 8<br>16.33% | 0.56 – 2.04<br>1.32 ± 0.50 (1.48)                             |
| 50  | 13   | 10<br>76.92% | 5<br>38.46% | 0.00 – 6.33<br>2.09 ± 2.61 (1.37)                             | 13                           | 13<br>100% | 4<br>30.77% | 0.29 – 2.80<br>1.45 ± 1.14 (0.85)                             |
| 60  | 7  | 6<br>85.71%  | 3<br>42.86% | 0.21 – 4.05<br>2.13 ± 2.72 (2.13)                             | 9                            | 9<br>100%  | 3<br>33.33% | 0.39 – 2.06<br>0.96 ± 0.95 (0.96)                             |

|         |     |              |              |                                    |     |             |              |                                   |
|---------|-----|--------------|--------------|------------------------------------|-----|-------------|--------------|-----------------------------------|
| Romania | 135 | 76<br>56.30% | 18<br>13.33% | 0.00 – 21.84<br>1.24 ± 3.70 (0.08) | 137 | 137<br>100% | 17<br>12.41% | 0.00 – 4.92<br>0.82 ± 0.98 (0.50) |
|---------|-----|--------------|--------------|------------------------------------|-----|-------------|--------------|-----------------------------------|

De Martonne's aridity index ( $I_{ar-dM}$ ) =  $P/(T+10)$ , where  $P$  is the mean annual precipitation (mm), and  $T$  is the mean annual air temperature (°C) [133,143].

**Table S7.** *Fusarium*-damaged kernels (FDKs) in common wheat by aridity— climatic water deficit in Romania in 2015 and 2016.

| Climatic Water Deficit (CWD), mm H <sub>2</sub> O (1900–2000) | <i>Fusarium</i> -Damaged Kernels (FDKs) in Common Wheat by Aridity— Climatic Water Deficit in Romania in 2015 and 2016 |              |              |   |                           |               |              |   |
|---|--|--------------|--------------|---|---------------------------|---------------|--------------|---|
|   | 2015   |              |              |   | 2016                      |               |              |   |
|   | No. of Samples; Incidence  |              |              | Interval of FDKs in Common Wheat, Mean ± SD (Median), % | No. of Samples; Incidence |               |              | Interval of FDKs in Common Wheat, Mean ± SD (Median), % |
|   | Total  | ≥0.01%       | ≥1%          |   | Total                     | ≥0.01%        | ≥1%          |   |
| –400  | 1  | 0<br>0%      | 0<br>0%      | 0.00  | 2                         | 0<br>0%       | 0<br>0%      | 0.00  |
| –350  | 1  | 0<br>0%      | 0<br>0%      | 0.00  | 2                         | 2<br>100%     | 0<br>0%      | 0.08 – 0.15<br>0.12                                     |
| –300  | 7  | 0<br>0%      | 0<br>0%      | 0.00  | 11                        | 11<br>100%    | 0<br>0%      | 0.15 – 0.52<br>0.31 ± 0.18 (0.29)                       |
| –250  | 3  | 2<br>66.67%  | 0<br>0%      | 0.03 – 0.08<br>0.06 ± 0.04 (0.06)                       | 4                         | 4<br>100%     | 0<br>0%      | 0.10 – 0.31<br>0.21 ± 0.15 (0.21)                       |
| –200  | 48   | 26<br>54.17% | 6<br>12.50%  | 0.00 – 5.63<br>0.63 ± 1.76 (0.05)                       | 38                        | 38<br>100%    | 4<br>10.53%  | 0.00 – 2.04<br>0.47 ± 0.58 (0.31)                       |
| –150  | 3  | 2<br>66.67%  | 0<br>0%      | 0.00 – 0.45   | 3                         | 2<br>66.67%   | 0<br>0%      | 0.02 – 0.11<br>0.08 ± 0.05 (0.11)                       |
| –100  | 43   | 22<br>51.16% | 3<br>7%      | 0.00 – 21.84<br>2.25 ± 6.52 (0.19)                      | 47                        | 47<br>100%    | 4<br>8.51%   | 0.11 – 4.92<br>1.18 ± 1.36 (0.76)                       |
| –50   | 5  | 3<br>60%     | 0<br>0%      | 0.03 – 0.40<br>0.22 ± 0.26 (0.22)                       | 5                         | 5<br>100%     | 2<br>40%     | 1.43 – 1.53<br>1.48 ± 0.07 (1.48)                       |
| 0   | 24   | 21<br>87.50% | 9<br>37.50%  | 0.21 – 6.33<br>2.35 ± 2.18 (2.36)                       | 25                        | 25<br>100%    | 7<br>28%     | 0.39 – 2.80<br>1.33 ± 1.01 (1.36)                       |
| Romania   | 135  | 76<br>56.30% | 18<br>13.33% | 0.00 – 21.84<br>1.24 ± 3.70 (0.08)                      | 137                       | 134<br>97.81% | 17<br>12.41% | 0.00 – 4.92<br>0.82 ± 0.98 (0.50)                       |

Climatic Water Deficit (CWD) =  $P - E_{To-PM}$ , where  $P$  is the precipitation sum (mm), and  $E_{To-PM}$  is the Penman-Monteith reference evapotranspiration (mm) [133,134].

**Table S8.** Correlation between *Fusarium*-damaged kernels (FDKs) in common wheat and the agrometeorological factors, historical aridity indices and geographic coordinates in Romania in the dry year 2015 (Pearson correlation coefficient).

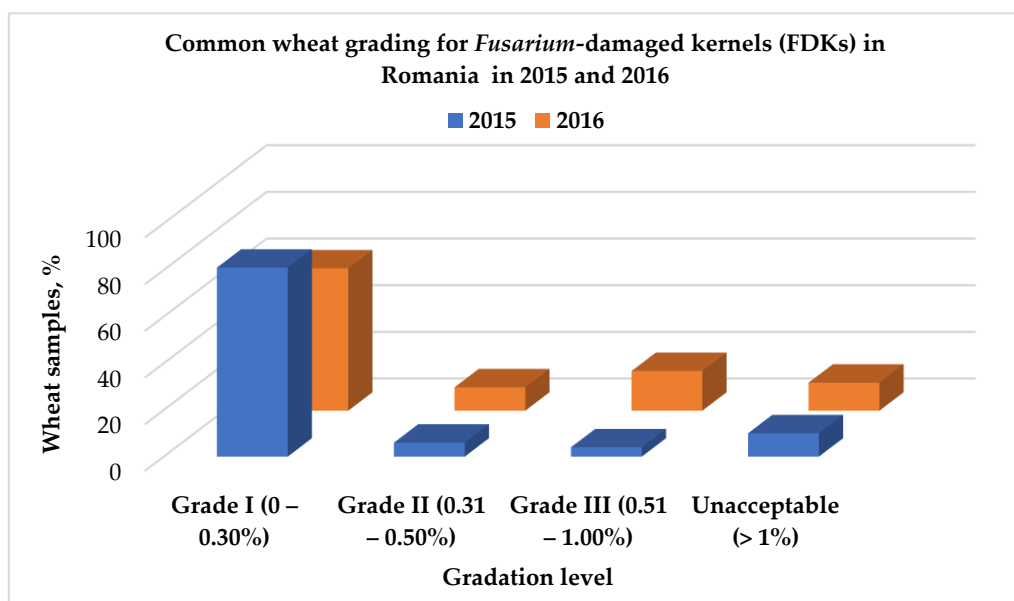
| Correlations in dry 2015                |                           | <i>Fusarium</i> -damaged kernels (FDKs) | Agrometeorology, May–June 2015 |                 | Aridity Indices, 1900–2000 |                        | Geographic Coordinates |            |
|---|---------------------------|---|--------------------------------|-----------------|----------------------------|------------------------|------------------------|------------|
|   |                           |   | Precipitation                  | Air Temperature | de Martonne Aridity Index  | Climatic Water Deficit | Latitude               | Longitude  |
| <i>Fusarium</i> -damaged kernels (FDKs) | Pearson Correlation       | 1.000                                   | 0.259                          | −0.171          | 0.249                      | 0.209                  | 0.246                  | −0.215     |
|   | Significance (two-tailed) |   | 0.102                          | 0.286           | 0.117                      | 0.190                  | 0.121                  | 0.176      |
|   | N                         | 41                                      | 41                             | 41              | 41                         | 41                     | 41                     | 41         |
| de Martonne Aridity Index (Iar-dM)      | Pearson Correlation       | 0.249                                   | 0.589 ***                      | −0.623 ***      | 1.000                      | 0.832 ***              | 0.231                  | −0.420 **  |
|   | Significance (two-tailed) | 0.117                                   | 0.000                          | 0.000           |                            | 0.000                  | 0.147                  | 0.006      |
|   | N                         | 41                                      | 41                             | 41              | 41                         | 41                     | 41                     | 41         |
| Climatic Water Deficit (CWD)            | Pearson Correlation       | 0.209                                   | 0.616 ***                      | −0.667 ***      | 0.832 ***                  | 1.000                  | 0.421 **               | −0.555 *** |
|   | Significance (two-tailed) | 0.190                                   | 0.000                          | 0.000           | 0.000                      |                        | 0.006                  | 0.000      |
|   | N                         | 41                                      | 41                             | 41              | 41                         | 41                     | 41                     | 41         |
| Latitude                                | Pearson correlation       | 0.246                                   | 0.114                          | −0.499 ***      | 0.231                      | 0.421 **               | 1.000                  | −0.121     |
|   | Significance (two-tailed) | 0.121                                   | 0.479                          | 0.001           | 0.147                      | 0.006                  |                        | 0.450      |
|   | N                         | 41                                      | 41                             | 41              | 41                         | 41                     | 41                     | 41         |
| Longitude                               | Pearson Correlation       | −0.215                                  | −0.502 ***                     | 0.178           | −0.420 **                  | 0.555 ***              | −0.121                 | 1.000      |
|   | Significance (two-tailed) | 0.176                                   | 0.001                          | 0.265           | 0.006                      | 0.000                  | 0.450                  |            |
|   | N                         | 41                                      | 41                             | 41              | 41                         | 41                     | 41                     | 41         |

\*—correlation at the 0.05 level (two-tailed); \*\*—correlation is significant at the 0.01 level (two-tailed); \*\*\*—correlation is very significant at the 0.001 level (two-tailed).

**Table S9.** Correlation between *Fusarium*-damaged kernels (FDKs) in common wheat and the agrometeorological factors, aridity indices and geographic coordinates in Romania in the rainy year 2016 (Pearson correlation coefficient).

| Correlations in rainy 2016                     |                           | <i>Fusarium</i> -damaged<br>kernels (FDKs) | Agrometeorology,<br>May–June 2016 |                    | Aridity Indices,<br>1900–2000 |                           | Geographic<br>Coordinates |            |
|--|---------------------------|--|-----------------------------------|--------------------|-------------------------------|---------------------------|---------------------------|------------|
|  |                           |  | Precipitation                     | Air<br>Temperature | de Martonne<br>Aridity Index  | Climatic<br>Water Deficit | Latitude                  | Longitude  |
| <i>Fusarium</i> -<br>damaged<br>kernels (FDKs) | Pearson Correlation       | 1.000                                      | 0.290                             | −0.217             | 0.367 *                       | 0.457 **                  | 0.214                     | −0.526 *** |
|  | Significance (two-tailed) |  | 0.066                             | 0.172              | 0.018                         | 0.003                     | 0.179                     | 0.000      |
|  | N                         | 41   | 41                                | 41                 | 41                            | 41                        | 41                        | 41         |
| de Martonne<br>Aridity Index<br>(Iar-dM)       | Pearson Correlation       | 0.367 **                                   | 0.287                             | −0.608 ***         | 1.000                         | 0.832 ***                 | 0.231                     | 0.420 **   |
|  | Significance (two-tailed) | 0.018                                      | 0.069                             | 0.000              |                               | 0.000                     | 0.147                     | 0.006      |
|  | N                         | 41   | 41                                | 41                 | 41                            | 41                        | 41                        | 41         |
| Climatic Water<br>Deficit<br>(CWD)             | Pearson Correlation       | 0.457 **                                   | 0.368 *                           | −0.688 ***         | 0.832 ***                     | 1.000                     | 0.421 **                  | −0.555 *** |
|  | Significance (two-tailed) | 0.003                                      | 0.018                             | 0.000              | 0.000                         |                           | 0.006                     | 0.000      |
|  | N                         | 41   | 41                                | 41                 | 41                            | 41                        | 41                        | 41         |
| Latitude                                       | Pearson correlation       | 0.214                                      | 0.291                             | −0.471 **          | 0.231                         | 0.421 **                  | 1.000                     | −0.121     |
|  | Significance (two-tailed) | 0.179                                      | 0.065                             | 0.002              | 0.147                         | 0.006                     |                           | 0.450      |
|  | N                         | 41   | 41                                | 41                 | 41                            | 41                        | 41                        | 41         |
| Longitude                                      | Pearson Correlation       | −0.526 ***                                 | −0.310 *                          | 0.161              | −0.420 **                     | 0.555 ***                 | −0.121                    | 1.000      |
|  | Significance (two-tailed) | 0.000                                      | 0.049                             | 0.314              | 0.006                         | 0.000                     | 0.450                     |            |
|  | N                         | 41   | 41                                | 41                 | 41                            | 41                        | 41                        | 41         |

\*—correlation at the 0.05 level (two-tailed); \*\*—correlation is significant at the 0.01 level (two-tailed); \*\*\*—correlation is very significant at the 0.001 level (two-tailed).



**Figure S3.** Common wheat grading for *Fusarium*-damaged kernels (FDKs) in Romania in the dry 2015 and the rainy 2016 year, respectively. The National Grading Plan for wheat consumption includes three levels: grade I – max. 0.3% (very good); grade II – max. 0.5% (good), grade III – max. 1% (acceptable), and unacceptable – >1% (unacceptable for consumption) [78].