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| **Table S1.** Information on 64 genotypes belonged to 15 wild and one cultivated species of genus *Hordeum,* usedd in the study during two years (2012-2013 and 2013-2014). | | | | | | | | | |
| Number | Genotype name |  |  | Gene bank code | Number | Genotype name |  |  | Gene bank code |
| 1 | HARI027 |  |  | BCC2054 | 41 | HMUR054 |  |  | GAR1140 |
| 2 | HARI028 |  |  | BCC2060 | 42 | HMUR064 |  |  | GAR2735 |
| 3 | HBRA061 |  |  | BCC2046 | 43 | HMUR092 |  |  | BCC2002 |
| 4 | HBRA062 |  |  | BCC2045 | 44 | HMUR098 |  |  | GRA1065 |
| 5 | HBUL034 |  |  | GRA1015 | 45 | HMUR100 |  |  | BCC2008 |
| 6 | HBUL124 |  |  | - | 46 | HMUR102 |  |  | BCC2009 |
| 7 | HCAP029 |  |  | BCC2062 | 47 | HMUR118 |  |  | - |
| 8 | HCOR011 |  |  | BCC2067 | 48 | HMUR119 |  |  | - |
| 9 | HCOR012 |  |  | BCC2039 | 49 | HMUR120 |  |  | - |
| 10 | HDEP007 |  |  | BCC2052 | 50 | HMUR121 |  |  | - |
| 11 | HDEP008 |  |  | BCC2047 | 51 | HMUR122 |  |  | - |
| 12 | HEUC009 |  |  | BCC2029 | 52 | HMUR123 |  |  | - |
| 13 | HPAR002 |  |  | BCC2025 | 53 | HMUR125 |  |  | - |
| 14 | HPAT024 |  |  | BCC2037 | 54 | HMUR126 |  |  | - |
| 15 | HPAT073 |  |  | BCC2032 | 55 | HMUR127 |  |  | - |
| 16 | HPRO014 |  |  | BCC2040 | 56 | HMUR128 |  |  | - |
| 17 | HPUS025 |  |  | BCC2043 | 57 | HMUR129 |  |  | - |
| 18 | HPUS026 |  |  | BCC2049 | 58 | HMUR130 |  |  | - |
| 19 | HSEC067 |  |  | GAR3578 | 59 | HMUR136 |  |  | - |
| 20 | HSEC070 |  |  | GAR1122 | 60 | HMUR138 |  |  | - |
| 21 | HSEC090 |  |  | GAR1016 | 61 | HMUR139 |  |  | - |
| 22 | HSTE017 |  |  | BCC2041 | 62 | HMUR140 |  |  | - |
| 23 | HMAR036 |  |  | BCC2011 | 63 | HMUR142 |  |  | - |
| 24 | HMAR037 |  |  | BCC2012 | 64 | HMUR146 |  |  | - |
| 25 | HMAR038 |  |  | BCC2005 | 65 | HS23 |  |  | HOR2703 |
| 26 | HMAR039 |  |  | GRA964 | 66 | HS24 |  |  | HOR2683 |
| 27 | HMAR040 |  |  | GRA890 | 67 | HS25 |  |  | HOR2682 |
| 28 | HMAR042 |  |  | - | 68 | HS26 |  |  | HOR10287 |
| 29 | HMAR041 |  |  | GRA1078 | 69 | HS31 |  |  | HOR10041 |
| 30 | HMAR047 |  |  | BCC2001 | 70 | HS35 |  |  | HOR9826 |
| 31 | HMAR056 |  |  | BCC2013 | 71 | HS48 |  |  | HOR2688 |
| 32 | HMAR131 |  |  | - | 72 | HS50 |  |  | HOR4873 |
| 33 | HMAR132 |  |  | - | 73 | HS54 |  |  | HOR4870 |
| 34 | HMAR133 |  |  | - | 74 | HS61 |  |  | HOR13534 |
| 35 | HMAR134 |  |  | - | 75 | HS67 |  |  | HOR11183 |
| 36 | HMAR135 |  |  | - | 76 | HV221 |  |  | HOR13837 |
| 37 | HMAR141 |  |  | - | 77 | HV244 |  |  | BCC78 |
| 38 | HMAR147 |  |  | - | 78 | HV637 |  |  | HOR14497 |
| 39 | HMUR050 |  |  | BCC2010 | 79 | HV646 |  |  | BCC65 |
| 40 | HMUR051 |  |  | GAR1121 | 80 | HV649 |  |  | HOR1654 |

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| **Table S2.** Analysis of variance and mean squares for agro-morphological and yield-related traits of 80 genotypes (G) evaluated in three moisture environments (E) during two years (Y) (2012-2013 and 2013-2014). | | | | | | | | | | | |
| SV (df) | | DH | DR | PH | SPL | TN | NSP | HKW | GY | BY | HI |
| Y (1) | | 3791.8\*\* | 2413.3\*\* | 3713.7\*\* | 4.9ns | 6032.5\*\* | 5815.2\*\* | 0.76\*\* | 71.4\*\* | 1793.9\* | 0.33\*\* |
| E (2) | | 1757.5\*\* | 3159.1\*\* | 19278.3\*\* | 129.4\*\* | 7698.0\*\* | 1344.4\*\* | 2.40\*\* | 276.6\*\* | 4835.0\*\* | 0.60\*\* |
| Y\*E (2) | | 274.4ns | 150.9\* | 206.2ns | 2.4ns | 268.3ns | 593.6\* | 0.04ns | 15.6ns | 195.4ns | 0.02ns |
| G (79) | | 901.6\*\* | 468.7\*\* | 2884.4\*\* | 37.3\*\* | 967.9\*\* | 3454.8\*\* | 13.04\*\* | 93.7\*\* | 1125.5\*\* | 0.16\*\* |
|  | |  |  |  |  |  |  |  |  |  |  |
| Between Groups (4) | | 3158.9\*\* | 2463.9\*\* | 31711.2\*\* | 401.1\*\* | 11119.8\*\* | 49360.4\*\* | 243.53\*\* | 1437.3\*\* | 16512.83\*\* | 0.046 ns |
| HVU (4) | | 183.4\*\* | 11.4\*\* | 132.7 ns | 1.6 ns | 7.9 ns | 149.5 ns | 0.36 ns | 28.7\* | 563.6 ns | 0.08\*\* |
| HSP (10) | | 118.8\*\* | 5.3\*\* | 366.3\*\* | 0.6\*\* | 14.3\* | 1347.2\*\* | 0.80\*\* | 29.4\*\* | 867.3\*\* | 0.14\*\* |
| HMA (15) | | 815.9\*\* | 581.3\*\* | 726.3\*\* | 2.1\*\* | 748.5\*\* | 299.0\*\* | 0.446\*\* | 21.5\*\* | 121.8\*\* | 0.27\*\* |
| HMU (25) | | 995.6\*\* | 458.1\*\* | 645.9\*\* | 7.3\*\* | 228.4\*\* | 161.9\*\* | 0.683\*\* | 22.7\*\* | 220.5\*\* | 0.13\*\* |
| OWBS (22) | | 924.3\*\* | 350.4\*\* | 3322.7\*\* | 53.7\*\* | 675.3\*\* | 2538.4\*\* | 1.27\*\* | 18.9\*\* | 238.9\*\* | 0.16\*\* |
| HVU vs HMA (1) | | 65.0ns | 2540.0\*\* | 11468.0\*\* | 240.4\*\* | 20402.8\*\* | 140190.5\*\* | 259.3\*\* | 2839.4\*\* | 24808.2\*\* | 0.047\* |
| HVU vs HMU (1) | | 3301.7\*\* | 63.2ns | 1362.8\*\* | 1.5ns | 9408.3\*\* | 158240.2\*\* | 160.5\*\* | 2402.1\*\* | 22881.6\*\* | 0.011ns |
| HSP vs HMA (1) | | 227.3\*\* | 3845.8\*\* | 83709.7\*\* | 889.1\*\* | 33571.6\*\* | 42612.5\*\* | 730.0\*\* | 2273.7\*\* | 34600.9\*\* | 0.015ns |
| HSP vs HMU (1) | | 2692.0\*\* | 22.5ns | 9967.0\*\* | 57.5\*\* | 15210.5\*\* | 55626.8\*\* | 523.8\*\* | 1776.2\*\* | 32451.0ns | 0.083\*\* |
| HMA vs HMU (1) | | 9389.7\*\* | 7324.5\*\* | 82812.3\*\* | 1124.9\*\* | 9216.5\*\* | 953.6\*\* | 55.0\*\* | 111.7\*\* | 347.7\*\* | 0.055\*\* |
| G\*Y (79) | | 38.9ns | 12.2ns | 72.40ns | 0.3ns | 13.7ns | 597.3\*\* | 0.22\*\* | 8.9\*\* | 171.0ns | 0.02\*\* |
| G\*E (158) | | 71.9\*\* | 53.2\*\* | 173.2\*\* | 2.4\*\* | 322.7\*\* | 291.5\*\* | 0.24\*\* | 12.68\*\* | 262.9\*\* | 0.05\*\* |
| G\*Y\*E (158) | | 10.4ns | 2.6ns | 27.9ns | 0.1ns | 9.2ns | 151.8ns | 0.04ns | 2.8\* | 87.8ns | 0.01ns |
| CV (%) | | 19.52 | 7.86 | 15.06 | 13.11 | 18.08 | 38.81 | 18.62 | 31.91 | 74.83 | 28.5 |
| ns, \* , \*\* : not significant, significant at p<0.05, p<0.01, respectively, DH; Days to heading, DR; Days to ripening, PH; Plant height, TN; Number of fertile tiller, SPL; Spike length, NSP; Number of seed per plant, HKW; Hundred kernel weight, GY; Grain yield, BY; Total above ground biomass yield, HI; Harvest index, Hsp; *H. vulgare ssp. spontaneum* , Hvu; *H. vulgare,* Hma; *H. marainum,* Hmu; *H. murinum;*  Owb; other wild barley. | | | | | | | | | | | |

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| **Table S3**. Summary statistics including minimum, maximum and means calculated for averages of two years for each water environment separately and also for means of three water environments for evaluated traits | | | | | | | | | | | |
|  |  | Traits | | | | | | | | | |
|  |  | DH | DR | PH | SPL | TN | NSP | HKW | GY | BY | HI |
|  |  | **Control** | | | | | | | | | |
| **HMA** | Minimum | 23.83 | 53.00 | 21.32 | 3.93 | 17.10 | 15.67 | 0.19 | 1.56 | 4.48 | 0.14 |
| Maximum | 50.17 | 83.67 | 51.32 | 6.43 | 38.16 | 36.37 | 0.95 | 5.77 | 23.66 | 0.76 |
| Means | 38.35 | 71.57 | 37.47 | 4.93 | 24.35 | 21.90 | 0.69 | 3.00 | 8.33 | 0.41 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **HMU** | Minimum | 8.33 | 45.17 | 51.50 | 6.93 | 13.40 | 10.51 | 0.87 | 0.98 | 4.41 | 0.22 |
| Maximum | 44.50 | 81.50 | 77.82 | 9.79 | 26.33 | 28.26 | 1.77 | 4.88 | 12.96 | 0.60 |
| Means | 28.48 | 66.17 | 61.86 | 8.26 | 21.04 | 18.06 | 1.29 | 3.14 | 8.28 | 0.39 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **OWBS** | Minimum | 8.17 | 59.00 | 25.05 | 4.23 | 7.90 | 11.72 | 0.21 | 0.68 | 2.09 | 0.15 |
| Maximum | 42.50 | 81.00 | 102.80 | 12.78 | 38.90 | 60.17 | 1.52 | 3.48 | 13.28 | 0.76 |
| Means | 32.11 | 69.45 | 61.32 | 8.12 | 18.94 | 25.01 | 0.74 | 1.95 | 5.38 | 0.40 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **HSP** | Minimum | 23.33 | 63.67 | 66.60 | 8.58 | 7.43 | 26.30 | 3.26 | 6.49 | 16.08 | 0.25 |
| Maximum | 40.00 | 67.67 | 89.10 | 9.33 | 11.47 | 112.99 | 4.77 | 10.31 | 29.50 | 1.17 |
| Means | 31.12 | 65.00 | 79.36 | 8.77 | 9.50 | 48.94 | 4.28 | 8.54 | 26.34 | 0.42 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **HVU** | Minimum | 28.33 | 63.17 | 47.32 | 7.18 | 9.40 | 66.61 | 3.18 | 9.13 | 25.83 | 0.23 |
| Maximum | 40.67 | 65.00 | 59.90 | 8.27 | 10.77 | 93.18 | 4.14 | 17.52 | 56.43 | 0.60 |
| Means | 34.73 | 63.97 | 56.02 | 7.75 | 10.15 | 79.45 | 3.79 | 14.09 | 39.16 | 0.40 |
|  |  | **Mild Drought Stress** | | | | | | | | | |
| **HMA** | Minimum | 14.67 | 54.67 | 20.23 | 3.98 | 25.10 | 9.74 | 0.33 | 1.79 | 6.18 | 0.15 |
| Maximum | 47.00 | 76.50 | 45.23 | 5.38 | 69.03 | 41.42 | 0.95 | 7.03 | 23.82 | 0.60 |
| Means | 32.00 | 67.33 | 32.16 | 4.68 | 45.33 | 24.83 | 0.63 | 4.17 | 16.15 | 0.31 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **HMU** | Minimum | 5.00 | 52.00 | 42.50 | 5.93 | 18.30 | 13.99 | 0.71 | 2.84 | 7.60 | 0.12 |
| Maximum | 38.50 | 66.00 | 69.93 | 9.30 | 51.40 | 43.35 | 2.04 | 11.26 | 36.11 | 0.57 |
| Means | 24.63 | 58.70 | 58.73 | 7.61 | 29.91 | 26.65 | 1.21 | 5.90 | 18.10 | 0.37 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **OWBS** | Minimum | 6 | 52.67 | 24.20 | 4.38 | 13.45 | 12.89 | 0.23 | 1.30 | 4.92 | 0.15 |
| Maximum | 43.50 | 77.50 | 108.75 | 12.28 | 50.60 | 54.31 | 1.45 | 8.99 | 27.40 | 0.60 |
| Means | 28.13 | 64.21 | 52.48 | 7.43 | 29.96 | 26.53 | 0.79 | 4.08 | 13.96 | 0.33 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **HSP** | Minimum | 29.33 | 59.67 | 57.47 | 6.82 | 7.97 | 30.90 | 3.32 | 5.63 | 30.00 | 0.16 |
| Maximum | 37.17 | 62.67 | 82.50 | 8.44 | 15.67 | 64.31 | 4.25 | 14.75 | 66.80 | 0.38 |
| Means | 32.77 | 61.03 | 69.39 | 7.79 | 11.14 | 47.53 | 3.90 | 10.19 | 40.21 | 0.27 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **HVU** | Minimum | 29.83 | 58.33 | 32.83 | 3.75 | 8.25 | 77.05 | 2.92 | 10.79 | 22.75 | 0.16 |
| Maximum | 47.33 | 61.00 | 64.13 | 6.75 | 10.50 | 99.57 | 3.30 | 14.00 | 46.67 | 0.47 |
| Means | 36.30 | 59.40 | 45.25 | 5.98 | 9.07 | 88.21 | 3.12 | 12.88 | 31.58 | 0.31 |
|  |  | **Intense Drought Stress** | | | | | | | | | |
| **HMA** | Minimum | 13 | 56.33 | 16.75 | 3.56 | 14.50 | 16.35 | 0.30 | 0.42 | 3.43 | 0.10 |
| Maximum | 46.67 | 76.00 | 35.32 | 4.72 | 55.28 | 29.96 | 1.01 | 5.63 | 19.20 | 0.67 |
| Means | 30.23 | 66.47 | 24.64 | 4.08 | 27.22 | 22.35 | 0.59 | 2.76 | 9.05 | 0.32 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **HMU** | Minimum | 8.50 | 52.50 | 22.90 | 3.99 | 10.66 | 8.81 | 0.76 | 1.22 | 8.17 | 0.14 |
| Maximum | 36.00 | 66.50 | 57.47 | 8.42 | 38.16 | 31.87 | 1.98 | 8.92 | 24.52 | 0.80 |
| Means | 24.17 | 59.65 | 44.06 | 5.90 | 23.17 | 17.34 | 1.23 | 4.38 | 14.11 | 0.34 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **OWBS** | Minimum | 6.00 | 52.50 | 16.15 | 3.31 | 10.48 | 10.31 | 0.21 | 0.65 | 2.26 | 0.12 |
| Maximum | 39.00 | 71.00 | 85.30 | 10.11 | 46.00 | 68.75 | 1.43 | 7.49 | 29.10 | 0.55 |
| Means | 24.55 | 62.74 | 41.46 | 6.15 | 22.98 | 25.63 | 0.76 | 2.55 | 9.97 | 0.31 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **HSP** | Minimum | 25.33 | 55.67 | 40.97 | 7.08 | 7.88 | 22.15 | 3.05 | 3.79 | 20.17 | 0.18 |
| Maximum | 35.17 | 58.83 | 63.35 | 8.39 | 15.42 | 69.79 | 4.61 | 14.94 | 73.63 | 0.41 |
| Means | 30.86 | 57.44 | 51.65 | 7.75 | 11.14 | 47.70 | 3.61 | 9.46 | 36.80 | 0.28 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **HVU** | Minimum | 25.50 | 56.50 | 38.77 | 5.95 | 5.28 | 58.26 | 2.75 | 8.23 | 20.08 | 0.19 |
| Maximum | 44.17 | 61.17 | 53.53 | 8.23 | 11.22 | 109.63 | 3.31 | 13.15 | 100.50 | 0.67 |
| Means | 33.20 | 57.93 | 46.21 | 7.32 | 9.13 | 85.49 | 2.94 | 10.05 | 42.24 | 0.41 |
|  |  | **Total means of three environments** | | | | | | | | | |
| **Control** | | 32.21a | 67.85a | 58.88a | 7.59a | 18.86c | 28.82b | 1.59a | 4.21b | 11.91c | 0.40a |
| **Mild Drought Stress** | | 28.91b | 62.31b | 52.32b | 6.90b | 29.12a | 32.97a | 1.47b | 6.08a | 20.45a | 0.33b |
| **Intense Drought Stress** | | 26.97c | 61.45c | 40.64c | 5.95c | 21.39b | 29.06b | 1.41b | 4.60b | 16.84b | 0.32b |
| DH; Days to heading, DR; Days to ripening, PH; Plant height, TN; Number of fertile tiller, SPL; Spike length, NSP; Number of seed per plant, HKW; Hundred kernel weight, GY; Grain yield, BY; Total above ground biomass yield, HI; Harvest index, Hsp; *H. vulgare ssp. spontaneum* , Hvu; *H. vulgare,* Hma; *H. marainum,* Hmu; *H. murinum;*  Owb; other wild barley. Total means of three in environments in each rows, followed by similar letter(s) are not significantly different at 5% probability level, using LSD Test. | | | | | | | | | | | |

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| GY(MDSl)= -0.33+0.81GY (IDS) |
| **Figure S1.** The biplot of GY under mild drought stress (MDS) to GY under intense drought stress (IDS). Definition of origin of the genotypes can be seen in Table 1. |

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| **Figure S2.** Biplot of PC1 vs. PC2, under control conditions obtained from principal component analysis. The means of two years for each environment have been used. DH; Days to heading, DR; Days to ripening, PH; Plant height, TN; Number of fertile tiller, SPL; Spike length, NSP; Number of seed per plant, HKW; Hundred kernel weight, GY; Grain yield, BY; Total above ground biomass yield, HI; Harvest index. Definition of origin of the genotypes can be seen in Table 1. |