

**ICARDA**  
**WINTER BARLEY PROGRAM**  
**2016 ANNUAL REPORT**  
**TURKEY**



**By Mesut Keser**  
**Ankara, Turkey**

Winter Barley Nurseries have been planted in 4 different locations in Turkey in 2015-16 crop growing season. The altitudes in locations change from 359 m asl in Sanliurfa to 1069 m asl in Konya and the coordinates change from 36° in Sanliurfa to 39° in Eskisehir Northern latitudes; from 30° in Eskisehir to 38° in Sanliurfa Eastern Longitude (Table 1). The material has not been harvested in Konya due to severe drought. Winter Barley International Nursery multiplications have been made in Sanliurfa.

One Advanced line selected from ICARDA germplasm has been submitted to State Variety Testing Trials in 2016 by GAPARI, Sanliurfa.

Table 1 The coordinates and altitudes of Locations in Turkey Winter Barley Nurseries have been planted in 2015-16.

| Institute*        | Coordinates                | Altitude (m) asl |
|-------------------|----------------------------|------------------|
| TZARI, Eskisehir  | 39°45'59.0"N; 30°24'15.5"E | 840              |
| CRIFC, Ankara     | 39°36'40.1"N; 32°40'31.8"E | 1069             |
| BDIARI, Konya     | 37°52'04.6"N; 32°33'14.3"E | 1007             |
| GAPARI, Sanliurfa | 36°43'12.1"N; 38°54'41.8"E | 359              |

\*TZARI Transitional Zone Agricultural Research Institute

CRIFC; Central Resarch Institutes for Fiedl Crops

BDIAR; Bahri Dagdas International Agricultural Research Institute

GAP Agricultural Research Institute

## **Growing conditions for 2015-16 crop growing season.**

The winter was warmer and the total precipitation was less than long term average in 2015-16 growing season in all locations where Winter Barley nurseries have been planted (Table 2). Especially, February, March and April temperatures were warmer in locations that resulted faster and more plant growth during winter that it is not the case in a normal year. The May is cooler than long term. There was a sharp temperature drop in late April up to -5 °C in April 22-24, 2016. It effected negatively and made big damage in crop especially in spring types. Though late cold damage effected badly the material, it provided an opportunity to discard the spring types in segregating populations and also in advanced lines.

Table 2 Mean Monthly temperatures and precipitations in locations

| Month | Temperature (0C) |           |           |           |              |           | Precipitation (mm) |           |           |           |              |           |
|-------|------------------|-----------|-----------|-----------|--------------|-----------|--------------------|-----------|-----------|-----------|--------------|-----------|
|       | Ankara, CRIFC    |           | Esk,TZARI |           | Konya, BDARI |           | Ankara, CRIFC      |           | Esk,TZARI |           | Konya, BDARI |           |
|       | 2015-16          | Long Term | 2015-16   | Long Term | 2015-16      | Long Term | 2015-16            | Long Term | 2015-16   | Long Term | 2015-16      | Long Term |
| Oct.  | 12.8             | 11.5      | 13,2      | 12.6      | 14.5         | 12.2      | 29.6               | 22.7      | 40.4      | 32.7      | 39           | 32.2      |
| Nov.  | 7.1              | 5.7       | 7,7       | 6.8       | 7.4          | 6.1       | 5.6                | 29.1      | 8.5       | 29.9      | 5.8          | 37.6      |
| Dec.  | -1.7             | 0.9       | -0,8      | 5.2       | -1           | 1.8       | 4.4                | 37.7      | 0         | 42.6      | 2.6          | 41.9      |
| Jan.  | -1.6             | -0.9      | 1,0       | -0.8      | 0.1          | -0.2      | 66.4               | 36.3      | 81.6      | 37.5      | 42.4         | 34.4      |
| Feb.  | 5.2              | 1         | 6,8       | 2.9       | 6.3          | 1.3       | 18.6               | 34        | 27.7      | 30.2      | 2.8          | 24.4      |
| Mar   | 5.9              | 5.1       | 7,5       | 5.8       | 7.7          | 5.5       | 67                 | 35.7      | 44.8      | 32.8      | 37.8         | 26.2      |
| April | 11.8             | 9.7       | 12,9      | 8.2       | 12.6         | 11.1      | 11.9               | 40.2      | 23.5      | 40.4      | 9            | 38.8      |
| May   | 12.8             | 14.4      | 14,2      | 16.1      | 15.9         | 15.7      | 57.8               | 46.9      | 55.3      | 44.3      | 35.2         | 41.7      |
| June  | 19               | 18.1      | 21,0      | 16.5      | 22.2         | 19.9      | 8.4                | 35.7      | 8.7       | 25        | 18.4         | 20.1      |
|       |                  |           |           |           |              |           | 269.7              | 318.3     | 290.5     | 315.4     | 193          | 297.3     |

There were 14 different nurseries planted in different locations in 2015-16 crop growing season (Table 3). While all nurseries, except International Nursery (IN) multiplications have been planted in Ankara, Advanced Yield Trials have been planted in Ankara, Konya and Eskisehir. Due to severe drought the trials have not been harvested in Konya. In total, 206 crosses have been made and planted for 2016-17 crop growing season in Ankara; all crosses were simple cross due to time and land limitations top cross could not be made. IN multiplications are done in Sanliurfa.

Table 3 Nurseries and number of material planted in Turkey in 2015-16 growing season

| No | 16Nursery       | No of entry | Rep | Location                    | The size     |
|----|-----------------|-------------|-----|-----------------------------|--------------|
| 1  | 16WBCB          | 160         | 1   | Ankara, Haymana             | 1 mx 1 row   |
| 2  | 16CROSS         | 206         |     | Ankara                      |              |
| 3  | 16WBF1          | 330         | 1   | Ankara                      | 1 mx 1 row   |
| 4  | 16WBF3          | 102         | 1   | Ankara                      | 2 m x 2 row  |
| 5  | 16WBF3-12       | 403         | 1   | Ankara                      | 5 m x 6 row  |
| 6  | 16WBF5          | 230         | 1   | Ankara                      | 2 m x 2 row  |
| 7  | 16WBHR          | 1650        | 1   | Ankara                      | 1 mx 1 row   |
| 8  | 16WBON          | 133         | 1   | Ankara, Eskişehir,<br>Konya | 2 m x 2 row  |
| 9  | 16WBAYT1        | 20          | 3   | Ankara, Eskişehir,<br>Konya | 5 m x 6 row  |
| 10 | 16WBAYT2        | 40          | 2   | Ankara, Eskişehir,<br>Konya | 5 m x 6 row  |
| 11 | 16WBCHECKS      | 45          | 1   | Ankara                      | 5 m x 6 row  |
| 12 | 16WBYT-17_INC   | 21          | 1   | Sanliurfa                   | 11 m x 6 row |
| 13 | 16WBIBYT-18_INC | 21          | 1   | Sanliurfa                   | 11 m x 6 row |
| 14 | 16WBIBON-17_INC | 61          | 1   | Sanliurfa                   | 11 m x 6 row |

## Yield Trials

The yield was higher in in Eskisehir, which is mainly due to good crop stand before the winter, less cold damage, better precipitation distribution and higher yield potential area of the place trial planted (Table 4). Radical, Tokak and Pamir009 were the check cultivars used in 16WBAYT1. The trial mean for 16WBAYT1 was 4007 and 5993 Kg/ha in Ankara and Eskisehir, respectively. Checks mean was lower than trial mean in Eskisehir and it was higher in Ankara. TARM92, as drought check and Larende, as high yield potential check, have been used as checks in 16WBAYT2. The mean check yields were higher in both locations than trial mean and selected entry means. This is mainly due to checks were later than advanced lines in the trial that they had better chance to benefit from later rainfall and they were affected less from the late frost either due to they were later or they were more frost hardy. Though the mean of selected entries were lower in terms of yield in this trial, there were number of advanced lines giving higher yields than best yielding and/or other checks; In Ankara the highest yielding line was Larende, advanced lines 7, 9, 12, 4 and 13 had higher yield than other checks; AL's 40, 27 and 9 were the highest lines in Eskisehir. The advanced lines were earlier and shorter than checks than checks in general (Table 6).

## Winter Barley International Nurseries

International Nursery seed multiplications and seed preparations have been done in Sanliurfa. Two different Winter Barley International Nurseries have been distributed from Turkey in 2016 for 2016-17 growing season. First one is Winter Barley International Observation Nursery (17WBION). It consists of 68 Advanced Lines, including checks (Table 8) and distributed 17 sets to 12 countries/cooperators (Table 6). Tarm92 and Larende has been used as checks in 17WBION. The other Nursery is Winter Barley International Yield Trial (17WBIYT). It consists of 24 Advanced Lines, including checks. Tarm92, Larende has been used as checks and 1 slot is left for Local Check. It is 2 reps for 6 m<sup>2</sup> harvest area. It is distributed 17 sets to 16 countries/cooperators. In addition, Dr. Mozaffar Roustai, DARI, Iran came and did selections from Observation Nurseries and Yield Trials. His selections (32 Lines) have been sent to DARI as Observation Nursery and 2 Advanced lines as 1 Kg from each has been sent DARI that could be used in Iran Food Security Project.

## Outcome of 2016

One Advanced Barley line selected from ICARDA germplasm has been submitted to State Variety Testing Trials in 2016 by GAPARI, Sanliurfa; the Pedigree, CID is given below. It has been submitted for its Malt quality and yield. There is a potential in target area, Southeastern part of Turkey. It is Facultative-Spring Type. The protein level is 9-10.2 % and yield is 4.8-6.5 t/ha.

| <u>Entry name</u> | <u>Cross</u>   | <u>Pedigree</u>                 | <u>Source</u> | <u>RT</u> |
|-------------------|----------------|---------------------------------|---------------|-----------|
| Malt12-2          | MSEL/LOGAN-BAR | CBSS03B00016S-0M-0Y-0M-0Y-1M-0Y | Malt-12INC    | 2         |

## 2016-17 Activities

Fourteen different Nurseries have been planted in different locations (Table 7).

Table 4 The Trial Mean yields of 16WBAYT1, 16WBAYT2 and checks in different locations.

|                                   | 16WBAYT1* |           |      | 16WBAYT2 |           |      |
|-----------------------------------|-----------|-----------|------|----------|-----------|------|
|                                   | Ankara    | Eskisehir | Mean | Ankara   | Eskisehir | Mean |
| Trial Mean Yield (Kg/ha)          | 4007      | 5993      | 5114 | 3665     | 5710      | 4688 |
| Check Mean Yield (Kg/ha)          | 4095      | 5858      | 4977 | 4656     | 6051      | 5354 |
| Selected Entry Mean Yield (Kg/ha) |           |           |      | 3940     | 6042      | 4991 |

\*Trial repeated in 2016-1

Table 5 Winter Barley Advanced Yield Trial1 (16WBAYT1) list, Heading date, Plant height and yields in 2015-16

| Entry No | CNAME  | HD    | Plant Hght cm | Ank Yield Kg/Ha | Esk Yield Kg/ha | Gr. Mean Kg/ha |
|----------|--|-------|---------------|-----------------|-----------------|----------------|
| 1        | Lignee131/ArabiAbiad//Mal1-4-3094-2/3/Alpha/Gumhuriyet//Sonate   | 9.05  | 75            | 4477            | 6340            | 5409           |
| 2        | Bulbul//BKFMaguelone1604/Lignee640/4/Birlik-1{WI2291//Apm/PI000046/3/Hml-02(ICB88-0575-2AP-0AP-6AP-0AP)}/5/GaraArpa        | 4.05  | 80            | 3418            | 4177            | 3797           |
| 3        | CWB117-77-9-7/4/Belt67-1608/Slr/3/Dicktoo/Cascade//Hip /5/Kc/MullersHeydla//SlS/3/GkOmega/4/Sararood*2                     | 9.05  | 70            | 4558            | 6552            | 5555           |
| 4        | Scio/3/Igri/MOB2639//P13161/Igri/4/Arta  | 14.05 | 85            | 5047            | 7016            | 6031           |
| 5        | Sadik-06/3/YEA1819/YEA195-4//Grivita   | 6.05  | 70            | 3945            | 6359            | 5152           |
| 6        | Pamir-168/4/Roho//Alger/Ceres362-1-1/3/CWB117-77-9-7   | 8.05  | 70            | 3779            | 5206            | 4492           |
| 7        | Baishishek/5/Nd10277/Shyri//Nd11231/Shyri/3/Azaf/4/Canela/Gob96Dh  | 13.05 | 100           | 0*              | 4544            | 4544**         |
| 8        | Baishishek/3/Alpha/Durra//Lignee131/ArabiAbiad   | 8.05  | 75            | 3495            | 5515            | 4505           |
| 9        | Baishishek/3/YEA168-4/YEA605-5//Lignee131/ArabiAbiad   | 10.05 | 80            | 4318            | 5949            | 5133           |
| 10       | CWB117-5-9-5//CWB117-77-9-7/ICB-104073/5/Excelle/4/Alpha/Durra/3/4679/105//YEA132TH  | 9.05  | 80            | 4971            | 7496            | 6233           |
| 11       | Bulbul/3/Excelle//CWB117-77-9-7/SlS  | 8.05  | 80            | 4632            | 5079            | 4856           |
| 12       | Coss/OWB71080-44-1H/3/Alpha/Durra//Slr   | 12.05 | 80            | 4413            | 6219            | 5316           |
| 13       | Lignee131/ArabiAbiad//Mal1-4-3094-2  | 10.05 | 80            | 5416            | 6785            | 6101           |
| 14       | Robur/WA2196-68//DZ40-66/8/Harma-02//11012-2/CM67/7/Mola/4/Brea'S'/DL70//Mozdosky/3/Nopal'S'/5/CI10622/CI05824/6/Lignee640 | 12.05 | 90            | 4361            | 5949            | 5155           |
| 15       | Robur/WA2196-68//DZ40-66/8/Harma-02//11012-2/CM67/7/Mola/4/Brea'S'/DL70//Mozdosky/3/Nopal'S'/5/CI10622/CI05824/6/Lignee640 | 15.05 | 85            | 2956            | 7274            | 5115           |
| 16       | Robur/WA2196-68//DZ40-66/8/Harma-02//11012-2/CM67/7/Mola/4/Brea'S'/DL70//Mozdosky/3/Nopal'S'/5/CI10622/CI05824/6/Lignee640 | 8.05  | 85            | 4182            | 5112            | 4647           |
| 17       | CWB117-77-9-7//Roho/Masurka/3/132TH/Tokak//Malta1-4-3094-2/4/K-88M1//GkOmega/Tokak   | 10.05 | 80            | 3882            | 6719            | 5300           |

|    |           |       |    |      |      |      |
|----|-----------|-------|----|------|------|------|
| 18 | Radical   | 11.05 | 75 | 3394 | 6113 | 4753 |
| 19 | Pamir-009 | 12.05 | 70 | 3942 | 5719 | 4831 |
| 20 | Tokak     | 12.05 | 95 | 4950 | 5743 | 5346 |
|    | Mean      |       |    | 4007 | 5993 | 5114 |

\*Killed by frost, no yield; \*\* Eskisehir yield

Table 6 Winter Barley Advanced Yield Trial2 (16WBAYT2) list, Heading date, Plant height and yields in 2015-16

| Enrty No | CNAME   | HD    | Plant Hght cm | Ank Yield Kg/ha | Esk Yield Kg/ha | Grand Mean Kg/ha |
|----------|---|-------|---------------|-----------------|-----------------|------------------|
| 1        | Wysor//K-281/Skorokhod/3/Regina   | 14.05 | 71.7          | 1656            | 2967            | 2312             |
| 2        | CWB117-77-9-7//Roho/Mazurka/3/Supie/4/Sararood                                      | 13.05 | 71.7          | 3102            | 5789            | 4446             |
| 3        | Kozir/Regina  | 13.05 | 80.0          | 4698            | 5596            | 5147             |
| 4        | Kozir/Regina  | 13.05 | 85.0          | 4891            | 5798            | 5345             |
| 5        | Sararood/3/YEA389-3/YEA475-4//Victoria/10/Excelle//CWB117-77-9-7/SIs/9/38P18/8/1/10 | 9.05  | 70.0          | 3235            | 5899            | 4567             |
| 6        | Pamir-147/Sonata/8/Alpha/Durra/7/P101/5/3896/1-15/3/3896/28//584/28/4/5050/6/Tipper | 11.05 | 75.0          | 4975            | 6088            | 5532             |
| 7        | Pamir-147/Sonata/8/Alpha/Durra/7/P101/5/3896/1-15/3/3896/28//584/28/4/5050/6/Tipper | 10.05 | 76.7          | 5299            | 5530            | 5415             |
| 8        | TARM92  | 14.05 | 81.7          | 3649            | 4666            | 4158             |
| 9        | Pamir-147/Sonata/8/Alpha/Durra/7/P101/5/3896/1-15/3/3896/28//584/28/4/5050/6/Tipper | 10.05 | 76.7          | 5077            | 7317            | 6197             |
| 10       | Hispanic/Sararood   | 8.05  | 68.3          | 3437            | 5484            | 4461             |
| 11       | Hispanic/Sararood   | 10.05 | 68.3          | 3469            | 5663            | 4566             |
| 12       | Hispanic/Sararood   | 9.05  | 75.0          | 4952            | 5847            | 5400             |
| 13       | Pamir-147/Sonata/8/Alpha/Durra/7/P101/5/3896/1-15/3/3896/28//584/28/4/5050/6/Tipper | 8.05  | 71.7          | 4744            | 4844            | 4794             |

|    |   |       |      |      |      |      |
|----|---|-------|------|------|------|------|
| 14 | Pamir-147/Sonata/8/Alpha/Durra/7/P101/5/3896/1-15/3/3896/28//584/28/4/5050/6/Tipper                     | 8.05  | 68.3 | 3657 | 5396 | 4527 |
| 15 | Pamir-147/Sonata/8/Alpha/Durra/7/P101/5/3896/1-15/3/3896/28//584/28/4/5050/6/Tipper                     | 8.05  | 70.0 | 4476 | 6059 | 5268 |
| 16 | Larende   | 13.05 | 75.0 | 5698 | 7140 | 6419 |
| 17 | Courlis//Alanda/Hamra-01/3/Regina   | 14.05 | 78.3 | 3003 | 5640 | 4322 |
| 18 | Zarjau/Regina   | 14.05 | 68.3 | 3440 | 4887 | 4164 |
| 19 | JLB-entry194/3/Triumph//CWB117-77-9-7/SIs   | 10.05 | 73.3 | 2830 | 4968 | 3899 |
| 20 | Pamir-010/Sahara-3768/5/Roho//Alger/Ceres362-1-1/3/Tipper/4/Viringa'S'                                  | 12.05 | 70.0 | 3782 | 6004 | 4893 |
| 21 | CWB117-77-9-7//Hml-02/ArabiAbiad*2/5/WI2291//Apm/PI000046/3/Varunda/4/Alpha/3/Roho//Alger/Ceres/6/Tokak | 14.05 | 75.0 | 3722 | 5786 | 4754 |
| 22 | CWB117-77-9-7//Roho/Mazurka/3/Supie/4/Sararood  | 10.05 | 80.0 | 3355 | 4974 | 4165 |
| 23 | Ince04  | 13.05 | 76.7 | 4735 | 7139 | 5937 |
| 24 | Robur/WA2196-68//K-281/Skorokhod/3/Mattina  | 15.05 | 68.3 | 1833 | 4428 | 3131 |
| 25 | Orsa/ICB100819//Sararood  | 10.05 | 73.3 | 3532 | 5683 | 4608 |
| 26 | Orsa/ICB100819//Gara Arpa   | 12.05 | 81.7 | 4168 | 4963 | 4566 |
| 27 | Aths/Lignee686/3/DeirAlla106/Lignee527//Asl/4/Lignee527/Rhn//Rhn-03/5/Mattina                           | 12.05 | 68.3 | 3652 | 7465 | 5559 |
| 28 | Pamir-147/Sonata/8/Alpha/Durra/7/P101/5/3896/1-15/3/3896/28//584/28/4/5050/6/Tipper                     | 9.05  | 70.0 | 3865 | 7115 | 5490 |
| 29 | Hispanic/Sararood   | 9.05  | 73.3 | 3623 | 6540 | 5082 |
| 30 | Pamir-147/Sonata/8/Alpha/Durra/7/P101/5/3896/1-15/3/3896/28//584/28/4/5050/6/Tipper                     | 10.05 | 61.7 | 2543 | 4355 | 3449 |
| 31 | Zarjau/Regina   | 16.05 | 70.0 | 2608 | 5819 | 4214 |
| 32 | Modeibeia; SE of Shoubak/Sararood   | 10.05 | 68.3 | 2495 | 5374 | 3935 |
| 33 | TARM92  | 13.05 | 95.0 | 4541 | 5260 | 4901 |
| 34 | YEA389-3/YEA475-4//Victoria/3/GkOmega/BM1-94-8069-45-0AP  | 12.05 | 66.7 | 3218 | 5522 | 4370 |
| 35 | Orsa/ICB100819//Gara Arpa   | 14.05 | 76.7 | 3620 | 4845 | 4233 |



|    |   |       |      |      |      |      |
|----|---|-------|------|------|------|------|
| 36 | CWB117-77-9-7//Roho/Mazurka/3/Supie/4/Sararood  | 9.05  | 68.3 | 2714 | 5767 | 4241 |
| 37 | Pamir-147/Sonata/8/Alpha/Durra/7/P101/5/3896/1-15/3/3896/28//584/28/4/5050/6/Tipper                               | 10.05 | 71.7 | 3173 | 5736 | 4455 |
| 38 | P101/5/3896/1-15/3/3896/28//584/28/4/5050/6/Tipper/7/Alpha/Durra/8/Roho//Alger/Ceres362-1-1/3/Tipper/4/Viringa'S' | 9.05  | 66.7 | 3428 | 6802 | 5115 |
| 39 | CWB117-77-9-7//Roho/Mazurka/3/Supie/4/Sararood  | 9.05  | 73.3 | 2663 | 5373 | 4018 |
| 40 | Aths/Lignee686/3/DeirAlla106/Lignee527//Asl/4/Lignee527/Rhn//Rhn-03/5/Mattina                                     | 12.05 | 66.7 | 3055 | 7877 | 5466 |
|    | Mean  |       |      | 3665 | 5710 | 4688 |

Table 6 Winter Barley International Nursery distribution from Turkey for 2016-17 growing season

| No | Country    | 17WBIYT | 17WBION | Total |
|----|------------|---------|---------|-------|
| 1  | Algeria    | 1       | 3       | 4     |
| 2  | Armenia    | 0       | 1       | 1     |
| 3  | Azerbaijan | 1       | 1       | 2     |
| 4  | Bulgaria   | 1       | 0       | 1     |
| 5  | China      | 1       | 1       | 2     |
| 6  | Greece     | 1       | 1       | 2     |
| 7  | Hungary    | 1       | 1       | 2     |
| 8  | Iran       | 2       | 3       | 5     |
| 9  | Jordan     | 1       | 0       | 1     |
| 10 | Lebanon    | 1       | 0       | 1     |
| 11 | Morocco    | 1       | 1       | 2     |
| 12 | Pakistan   | 2       | 1       | 3     |
| 13 | Syria      | 1       | 1       | 2     |
| 14 | Tunisia    | 1       | 1       | 2     |
| 15 | Uzbekistan | 2       | 2       | 4     |
|    | Total      | 17      | 17      | 34    |

Table 7 The Winter Barley nurseries planted in 2016-17 growing season

| No | 17Nursery   | No of entry | Rep | Location                                 | Plot size                                 |
|----|-------------|-------------|-----|--|---|
| 1  | 17WBCB      | 168         | 1   | Ankara                                   | 1 mx 1 row                                |
| 2  | 17WBF1      | 206         | 1   | Ankara                                   | 1 mx 1 row                                |
| 3  | 17WBF2      | 181         | 1   | Ankara                                   | 2 m x 2 row                               |
| 4  | 17WBF4      | 61          | 1   | Ankara                                   | 2 m x 2 row                               |
| 5  | 17WBF4-12   | 226         | 1   | Ankara                                   | 5 m x 6 row                               |
| 6  | 17WBHR      | 385         | 1   | Ankara                                   | 1m/spike                                  |
| 7  | 17WBON      | 292         | 1   | Ankara, Eskisehir                        | 2 m x 2 rows                              |
| 8  | 17WBPYT     | 70          | 1   | Ankara                                   | 5 m x 6 row                               |
| 9  | 17CanWBAYT  | 20          | 1   | Ankara, Sanliurfa                        | Ank 5 m x 6 row,<br>Sanliurfa 20m x 6 row |
| 10 | 17WBAYT     | 25          | 2   | Ankara, Sanliurfa,<br>Konya, Ankara Path | Ank 5 m x 6 row,<br>Sanliurfa 20m x 6 row |
| 11 | 17WBCHECKS  | 46          | 1   | Ankara                                   | 5 m x 6 row                               |
| 12 | 17WBIYT     | 24          | 2   | Ankara                                   | 5 m x 6 row                               |
| 13 | 17WBION     | 68          | 1   | Ankara                                   | 2 m x 2 rows                              |
| 14 | 17WBIRAN-ON | 32          | 1   | Ankara                                   | 2 m x 2 rows                              |

Table 8 The list of Winter Barley International Observation Nursery distributed for 2016-17 growing season (17WBION)

| Ent. No | Name                                   | Pedigree                          |
|---------|--|-----------------------------------|
| 1       | TARM92                                 |                                   |
| 2       | Larende                                |                                   |
| 3       | Coss/OWB71080-44-1H/3/Alpha/Durra//Slr | ICBH97-0107-0AP-0AP-18AP-0AP-3AP- |
| 4       | Lignee131/ArabiAbiad//Mal1-4-3094-2    | ICBH92-0339-0AP-3AP-0AP-2AP-0AP-  |

| Ent. No | Name   | Pedigree                    |
|---------|--|-----------------------------|
| 5       | Robur/WA2196-68//DZ40-66/8/Harma-02//11012-2/CM67/7/Mola/4/Brea'S'/DL70//Mozdosky/3/Nopal'S'/5/CI10622/CI05824/6/Lignee640 | ICB05-1096-0AP-8AP-0AP-0AP  |
| 6       | Alanda/8/Harma-02//11012-2/CM67/7/Mola/4/Brea'S'/DL70//Mozdosky/3/Nopal'S'/5/CI10622/CI05824/6/Lignee640                   | ICB05-1100-0AP-10AP-0AP-0AP |
| 7       | ChiCm/An57//Albert/3/ICB-102379/4/GkOmega/5/Pamir-013/Pamir-149  | ICB05-1120-0AP-3AP-0AP-0AP  |
| 8       | Mal1-4-3094-2//YEA762-2/YEA605-5/3/Wieselbuger//Ahor1303-61//Ste/Antares   | ICB05-1175-0AP-4AP-0AP-0AP  |
| 9       | Kc/MullersHeydla//BKFMaguelone1604/Alt/3/K-247/2401-13//Vavilon/4/Meteor   | ICB05-1204-0AP-8AP-0AP-0AP  |
| 10      | Kc/MullersHeydla//BKFMaguelone1604/Alt/3/K-247/2401-13//Vavilon/4/Pamir-154//ICB-100709/WB156                              | ICB05-1205-0AP-7AP-0AP-0AP  |
| 11      | Kc/MullersHeydla//BKFMaguelone1604/Alt/3/K-247/2401-13//Vavilon/4/Pamir-154//ICB-100709/WB156                              | ICB05-1205-0AP-10AP-0AP-0AP |
| 12      | Viringa'S'/Radical/3/Pamir-154//ICB-100709/WB156   | ICB05-1211-0AP-1AP-0AP-0AP  |
| 13      | Tipper/ICB-102854//Alpha/Durra/3/80-5024/F3BulkHip//Lignee131  | ICB05-1304-0AP-3AP-0AP-0AP  |
| 14      | CWB117-5-9-5/3/Alpha/Durra//Slr/4/Tipper/Arda  | ICB05-1352-0AP-9AP-0AP-0AP  |
| 15      | Lignee131/ArabiAbiad//Mal1-4-3094-2/3/Coss/OWB71080-44-1H//Ste/Antares   | ICB05-1380-0AP-7AP-0AP-0AP  |
| 16      | ChiCm/An57//Albert/3/ICB-102379/4/GkOmega/5/Sararood*2   | ICB05-1428-0AP-9AP-0AP-0AP  |
| 17      | ChiCm/An57//Albert/3/ICB-102379/4/GkOmega/5/ Ste/Lignee640//Hml-02/ArabiAbiad*2/3/Sararood                                 | ICB04-1960-0AP-1AP-0AP      |
| 18      | Scio/3/Igri/MOB2639//P13161/Igri/5/Kc/MullersHeydla//SlS/3/Victoria/4/Sararood   | ICB04-1967-0AP-9AP-0AP      |
| 19      | Scio/5/Lignee640/3/CI02325/CI12225//Boy*2/Surb*3/4/CI14100/6/Kc/MullersHeydla//SlS/3/Victoria/4/Sararood                   | ICB04-1970-0AP-1AP-0AP      |
| 20      | <b>TARM92</b>  |                             |

| <b>Ent. No</b> | <b>Name</b>  | <b>Pedigree</b>                    |
|----------------|--|------------------------------------|
| 21             | <b>Larende</b>   |                                    |
| 22             | Scio/5/Lignee640/3/CI02325/CI12225//Boy*2/Surb*3/4/CI14100/6/Kc/MullersHeydla//SIs/3/Victoria/4/Sararood       | ICB04-1970-0AP-4AP-0AP             |
| 23             | Birlik-1/3/YESEVI-93//ICB-103351/Arta  | ICB04-1715-0AP-6AP-0AP             |
| 24             | Birlik-1/3/YESEVI-93//ICB-103351/Arta  | ICB04-1715-0AP-7AP-0AP             |
| 25             | CWB117-77-9-7/4/Belt67-1608/Slr/3/Dicktoo/Cascade//Hip /5/CWB117-77-9-7//BKFMaguelone1604/Lignee640/3/Sararood | ICB04-1976-0AP-4AP-0AP             |
| 26             | Bulbul/3/Excelle//CWB117-77-9-7/SIs  | ICB04-1566-0AP-3AP-0AP             |
| 27             | Pamir-010/Sahara-3768/3/YEA168.4/YEA605.5//Lignee131/ArabiAbiad  | ICB04-1709-0AP-4AP-0AP             |
| 28             | GkOmega/4/Arr/Esp//Alger/Ceres362-1-1/3/ICB-100175/5/Birlik-1  | ICB04-1760-0AP-8AP-0AP             |
| 29             | CWB117-9-7/3/Roho//Alger/Ceres362-1-1/4/Sadik-02   | ICB04-1778-0AP-4AP-0AP             |
| 30             | CWB117-77-9-7//Alpha/Durra(TH)/4/YEA168-4/YEA605.5//Lignee131/ArabiAbiad/3/Sararood                            | ICB04-1830-0AP-2AP-0AP             |
| 31             | Grivita/Malta1-4-3094-2/3/Lignee131/ArabiAbiad//Mal1-4-3094-2  | ICB04-1831-0AP-8AP-0AP             |
| 32             | Antares/Ky63-1294//CWB117-77-9-7/5/Kc/MullersHeydla//SIs/3/AlphaDurra//Slr/4/Sararood                          | ICB04-1837-0AP-2AP-0AP             |
| 33             | Roho/Mazurka//Tokak  | ICBH97-0041-0AP-0AP-10AP-0AP-13AP- |
| 34             | Lignee131/ArabiAbiad//Mal1-4-3094-2  | ICBH92-0339-0AP-3AP-0AP-2AP-0AP-   |
| 35             | Lignee131/ArabiAbiad//Mal1-4-3094-2  | ICBH92-0339-0AP-3AP-0AP-2AP-0AP-   |
| 36             | Lignee131/ArabiAbiad//Mal1-4-3094-2  | ICBH92-0339-0AP-3AP-0AP-2AP-0AP-   |

| Ent. No | Name   | Pedigree                         |
|---------|--|----------------------------------|
| 37      | Lignee131/ArabiAbiad//Mal1-4-3094-2  | ICBH92-0339-0AP-3AP-0AP-2AP-0AP- |
| 38      | Robur/WA2196-68//DZ40-66/8/Harma-02//11012-2/CM67/7/Mola/4/Brea'S'/DL70//Mozdosky/3/Nopal'S'/5/CI10622/CI05824/6/Lignee640 | ICB05-1096-0AP-7AP-0AP-0AP       |
| 39      | Alanda/8/Harma-02//11012-2/CM67/7/Mola/4/Brea'S'/DL70//Mozdosky/3/Nopal'S'/5/CI10622/CI05824/6/Lignee640                   | ICB05-1098-0AP-6AP-0AP-0AP       |
| 40      | <b>TARM92</b>  |                                  |
| 41      | <b>Larende</b>   |                                  |
| 42      | Alanda/8/Harma-02//11012-2/CM67/7/Mola/4/Brea'S'/DL70//Mozdosky/3/Nopal'S'/5/CI10622/CI05824/6/Lignee640                   | ICB05-1099-0AP-3AP-0AP-0AP       |
| 43      | Alanda/8/Harma-02//11012-2/CM67/7/Mola/4/Brea'S'/DL70//Mozdosky/3/Nopal'S'/5/CI10622/CI05824/6/Lignee640                   | ICB05-1099-0AP-6AP-0AP-0AP       |
| 44      | Alanda/8/Harma-02//11012-2/CM67/7/Mola/4/Brea'S'/DL70//Mozdosky/3/Nopal'S'/5/CI10622/CI05824/6/Lignee640                   | ICB05-1100-0AP-1AP-0AP-0AP       |
| 45      | Alanda/8/Harma-02//11012-2/CM67/7/Mola/4/Brea'S'/DL70//Mozdosky/3/Nopal'S'/5/CI10622/CI05824/6/Lignee640                   | ICB05-1100-0AP-6AP-0AP-0AP       |
| 46      | ChiCm/An57//Albert/3/ICB-102379/4/GkOmega/5/Pamir-013/Pamir-149  | ICB05-1120-0AP-7AP-0AP-0AP       |
| 47      | ChiCm/An57//Albert/3/ICB-102379/4/GkOmega/5/Pamir-013/Pamir-149  | ICB05-1120-0AP-9AP-0AP-0AP       |
| 48      | ChiCm/An57//Albert/3/ICB-102379/4/GkOmega/5/Pamir-065/Pamir-149  | ICB05-1121-0AP-7AP-0AP-0AP       |
| 49      | Scio/3/Igri/MOB2639//P13161/Igri/4/Pamir-065/Pamir-149   | ICB05-1134-0AP-6AP-0AP-0AP       |
| 50      | Scio/3/Igri/MOB2639//P13161/Igri/4/Pamir-065/Pamir-149   | ICB05-1134-0AP-7AP-0AP-0AP       |
| 51      | 80-5001/Scio//Victoria/Mal1-4-3094-2   | ICB05-1179-0AP-10AP-0AP-0AP      |
| 52      | M25-84/Attiki//Cr.366-15-2/NopalS/3/Skorohod/4/Pamir-154//ICB-100709/WB156   | ICB05-1187-0AP-5AP-0AP-0AP       |

| <b>Ent. No</b> | <b>Name</b>   | <b>Pedigree</b>             |
|----------------|---|-----------------------------|
| 53             | Rapidan//K-281/Skorokhod/3/Pamir-154//ICB-100709/WB156                                  | ICB05-1196-0AP-1AP-0AP-0AP  |
| 54             | Rapidan//K-281/Skorokhod/3/Pamir-154//ICB-100709/WB156                                  | ICB05-1196-0AP-7AP-0AP-0AP  |
| 55             | Sararood/145L2  | ICB05-1271-0AP-1AP-0AP-0AP  |
| 56             | Sararood/145L2  | ICB05-1271-0AP-3AP-0AP-0AP  |
| 57             | GkOmega/BM1-94-8069-45-0AP//K-88M1/Tokak  | ICB05-1290-0AP-10AP-0AP-0AP |
| 58             | CWB117-77-9-7/SIs/7/P101/5/3896/1-15/3/3896/28//584/28/4/5050/6/Tipper/8/K-88M1/85M1    | ICB05-1291-0AP-1AP-0AP-0AP  |
| 59             | Roho/Masurka//ICB-103020/3/Alpha/Durra// Slr/4/Coss/OWB71080-44-1H/3/Alpha//Sul/Nacta   | ICB05-1319-0AP-6AP-0AP-0AP  |
| 60             | Roho/Masurka//ICB-103020/3/Alpha/Durra//Slr/4 /Coss/OWB71080-44-1H/3/Alpha//Sul/Nacta   | ICB05-1319-0AP-7AP-0AP-0AP  |
| 61             | <b>TARM92</b>   |                             |
| 62             | <b>Larende</b>  |                             |
| 63             | ICB-103351/Arta//K-88M1/4/Kc/MullersHeydla//SIs/3/AlphaDurra//Slr                       | ICB05-1348-0AP-2AP-0AP-0AP  |
| 64             | YEA389-3/YEA475-4//Victoria/3/Birlik-1  | ICB04-1757-0AP-6AP-0AP      |
| 65             | Lignee131/ArabiAbiad//Mal1-4-3094-2/3/Coss/OWB71080-44-1H//Ste/Antares                  | ICB05-1380-9AP-0AP          |
| 66             | CWB117-77-9-7/SIs/7/P101/5/3896/1-15/3/3896/28//584/28/4/5050/6/Tipper/8/K-88M1/85M1    | ICB05-1291-0AP-7AP-0AP-0AP  |
| 67             | CWB117-77-9-7//Roho/Masurka/3/132TH/Tokak//Malta1-4-3094-2/4/K-88M1//GkOmega/Tokak      | ICB05-1293-0AP-2AP-0AP-0AP  |
| 68             | CWB117-77-9-7//Roho/Masurka/3/Supie/5/Roho// Alger/Ceres362-1-1/3/Tipper/4/Roho/Masurka | ICB05-1294-0AP-2AP-0AP-0AP  |

Table 9 The list of Winter Barley International Yield Trial distributed for 2016-17 growing season (17WBIYT)

| E. No | CID   | PEDIGREE               |
|-------|---|------------------------|
| 1     | <b>TARM92</b>   |                        |
| 2     | Sadik-02*2/3/Pamir-154//ICB-100709/WB156  | ICB04-1603-0AP-9AP-0AP |
| 3     | Pamir-010/Sahara-3768/3/YEA168.4/YEA605.5//Lignee131/ArabiAbiad                       | ICB04-1709-0AP-2AP-0AP |
| 4     | Excelle//CWB117-77-9-7/Sls/3/Pamir-147/Sonata   | ICB04-1732-0AP-8AP-0AP |
| 5     | 145L2/3/Lignee131/ArabiAbiad//Mal1-4-3094-2   | ICB04-1739-0AP-4AP-0AP |
| 6     | WKN5185-82/Pamir-038//Pamir-147/Sonata  | ICB04-1754-0AP-1AP-0AP |
| 7     | GkOmega/4/Arr/Esp//Alger/Ceres362-1-1/3/ICB-100175/5/Birlik-1                         | ICB04-1760-0AP-7AP-0AP |
| 8     | CWB117-9-7/3/Roho//Alger/Ceres362-1-1/5/Roho/Masurka//ICB-103020/3/GkOmega/4/Sararood | ICB04-1776-0AP-8AP-0AP |
| 9     | CWB117-9-7/3/Roho//Alger/Ceres362-1-1/4/CWB117-5-9-5/Pamir-149                        | ICB04-1781-0AP-4AP-0AP |
| 10    | YESEVI-93//ICB-103351/Arta/5/Kc/ MullersHeydla//Sls/3/Victoria/4/Sararood             | ICB04-1841-0AP-3AP-0AP |
| 11    | YESEVI-93//ICB-103351/Arta/5/Kc/ MullersHeydla//Sls/3/Victoria/4/Sararood             | ICB04-1841-0AP-4AP-0AP |
| 12    | <b>Larende</b>  |                        |
| 13    | BKFMaguelone1604/Lignee640//Grivita/3/Lignee131/ArabiAbiad//Mal1-4-3094-2             | ICB04-1953-0AP-6AP-0AP |
| 14    | Scio/3/Igri/MOB2639//P13161/Igri/5/Kc/MullersHeydla//Sls/3/Victoria/4/Sararood        | ICB04-1967-0AP-3AP-0AP |
| 15    | Scio/3/Igri/MOB2639//P13161/Igri/5/Kc/MullersHeydla//Sls/3/Victoria/4/Sararood        | ICB04-1967-0AP-9AP-0AP |

|    |  |                             |
|----|--|-----------------------------|
| 16 | CWB117-77-9-7/4/Belt67-1608/Slr/3/Dicktoo/Cascade//Hip /5/CWB117-77-9-7//BKFMaguelone1604/Lignee640/3/Sararood | ICB04-1976-0AP-4AP-0AP      |
| 17 | Sararood/5/GkOmega/4/CI08887/CI05761//Man/CI02320/3/Alger/Ceres362-1-1//Emir                                   | ICB05-1260-0AP-6AP-0AP-0AP  |
| 18 | CWB117-77-9-7//Roho/Masurka/3/Supie/5/Roho //Alger/Ceres362-1-1/3/Tipper/4/Roho/Masurka                        | ICB05-1294-0AP-10AP-0AP-0AP |
| 19 | Bulbul/3/Excele//CWB117-77-9-7/Sls   | ICB04-1566-0AP-8AP-0AP      |
| 20 | Birlik-1/3/YESEVI-93//ICB-103351/Arta  | ICB04-1715-0AP-2AP-0AP      |
| 21 | 38P18/8/1/10/9/Excele//CWB117-77-9-7/Sls   | ICB04-1720-0AP-10AP-0AP     |
| 22 | Victoria/Tirchmir-43/4/Birlik-1  | ICB04-1766-0AP-8AP-0AP      |
| 23 | GkOmega/CWB117-5-9-5//Pamir-147/Sonata   | ICB04-1809-0AP-1AP-0AP      |
| 24 | <b>Local Check</b>   |                             |