Spring Bread Wheat Breeding at ICARDA

Research highlights for 2016 season

W. Tadesse, S. El-hanafi, A.Sherif, S. Tawkaz

March 6, 2017
Adelaide, Australia
Key activities carried out in 2016

1. Crosses:
   - 2500 simple and top crosses at Terbol, Lebanon
   - 500 simple crosses at Guich, Morocco

2. Evaluation of segregating generations
   - Carried out using the Terbol-Sids-Kulumsa-Merchuch/Terbol shuttle

3. Production of doubled haploids (DH)
   - About 1000 DH lines have been produced and multiplied at Terbol (from 10 crosses)
   - About 2000 haploids are under production currently from 15 crosses

3. Yield trials:
   PYTs and AYTs at Marchuch & Jammat Shaim (Morocco); Terbol (Lebanon), Sids (Egypt); Wadmedani (Sudan)

4. Genotyping:
   All the AYTs have been genotyped using 15 K SNP

5. Quality analysis

6. Composing and distribution of International nurseries

7. Wheat breeding course
The following International nurseries and yield trials have been distributed from Terbol station, Lebanon to countries in the CWANA and SSA regions and beyond up on request from the NARS.

1. Spring bread wheat observation nursery for CWANA (17th CWANA SBWON)
2. Spring bread wheat observation nursery for heat tolerance (17th SBWON HT)
3. Spring bread wheat yield trial for heat tolerance (17th HT-ESBWYT)
4. Spring bread wheat yield trial for dry-land environments (17th CWANA DSBWYT)
5. Elite spring bread wheat yield trial (17th ESBWYT)
6. Especial nursery for 12 countries in Sub Saharan Africa (AfDB project)
7. CAIGE nursery for 2016/17
Response of wheat genotypes to rusts and septoria in Ethiopia, 2016
Variability of advanced wheat genotypes for heading date as compared to Attila

- Merchouch
- Sids
- Terbol
- Wad Madani

Green bars represent genotypes \( \leq \) Attila, and red bars represent genotypes \( > \) Attila.
Yield across locations, 2015/16

Yield in % of Attila

Sids
Terbol
Sudan

Yield in % of Attila
Merchouch, 2016
We were able to increase only elite materials using supplementary irrigation. It was the most dry season in Morocco.
Number of high yielding genotypes above the local check

Performance of elite spring bread wheat genotypes in the 16th ESBWYT, 2016 across locations
## Capacity building: short and long term trainings

### I. Wheat breeding course: April 10-May 2, 2016, Terbol, Lebanon

### II. MSc & PhD Students

<table>
<thead>
<tr>
<th>Name</th>
<th>Sex</th>
<th>Country</th>
<th>Degree level</th>
<th>Study area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sahar Bennani</td>
<td>F</td>
<td>Morocco</td>
<td>PhD</td>
<td>Drought tolerance</td>
</tr>
<tr>
<td>Samira El-Hanafi</td>
<td>F</td>
<td>Morocco</td>
<td>PhD</td>
<td>Hybrid wheat</td>
</tr>
<tr>
<td>Sawsan Tawkaz</td>
<td>F</td>
<td>Syria</td>
<td>PhD</td>
<td>Doubled haploid techniques</td>
</tr>
<tr>
<td>Yewbdar Shewaye</td>
<td>F</td>
<td>Ethiopia</td>
<td>M.Sc.</td>
<td>Yellow rust</td>
</tr>
<tr>
<td>Choghag Demirjian</td>
<td>F</td>
<td>Lebanon</td>
<td>M.Sc.</td>
<td>Drought tolerance</td>
</tr>
<tr>
<td>Sofian</td>
<td>M</td>
<td>Sudan</td>
<td>PhD</td>
<td>Heat stress</td>
</tr>
<tr>
<td>Tilahun Mekonnen</td>
<td>M</td>
<td>Ethiopia</td>
<td>PhD</td>
<td>Septoria</td>
</tr>
<tr>
<td>Mathewos Ashamo</td>
<td>M</td>
<td>Ethiopia</td>
<td>PhD</td>
<td>Stem and leaf rust</td>
</tr>
</tbody>
</table>
Publications

I. Hand book.


II. Book Chapter


III. Journal.


IV. Tools and guides


Acknowledgements

• ICARDA’s Wheat Team+ M.Sc. and PhD students

• NARSs in the CWANA

• INRA-Morocco; ARC-EGYPT; AUB & AREC-Lebanon; EIAR-Ethiopia; ARC-Sudan and Turkey

• GRDC; AfDB, EU-IFAD, WHEAT CRP
Thank you