CHARACTERIZATION OF TOMATO LANDRACES

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The germplasm collection of genus Lycopersicon includes 1193 accessions: 656 cultivars, 422 landraces, 63 breeding lines and 52 accessions of wild species. The working collection is conducted each year to multiply and evaluate the accessions collected during expeditions and the accessions from gene bank storage.

Material and methods

Twenty-three tomato landraces (11 indeterminate, 12 determinate) were grown in the field. Twenty-one accessions were of Polish and 2 of Syrian origin. Characterization of 42 morphological and economic traits according to IGPRI descriptors list (IGPRI, 1996) was conducted (10 traits of plants and 32 traits of fruits).

The seeds were sown on April 11, tomato seedlings (20 plants per plot) were planted in the field on May 23 in two replications. The harvest of ripe fruits started from the half of July. Observations of plants from the beginning to the end of vegetation were performed. Reported data were recorded on 20 tomato plants from each accession. The observation results of selected 16 traits of 22 tomato landraces and cultivar’s New Yorker as standard are presented in table 1.

Results

Landraces of tomato were greatly variable in relation to most of examined traits (table 1). Obtained results allow to distinguish the genotypes suitable for breeding for different demands. Presented data give us the opportunity to search a source of valuable research material.

The examined tomato landraces were tolerant of drought during vegetative period. Among determinate landraces - 2 stiff stemmed (POLKUR04-40, KOS-13II) rest flaccid stemmed. The earliest was the landrace POLKUR04-70 and New Yorker.

Numerous accessions can be used as a valuable material in the breeding of new cultivars for fresh market and processing.

The most valuable were landraces BL-301, BL-313I, KOS-15 characterized by good shape, firm and healthy fruits and good flesh intensity. These accessions can be utilized in breeding for processing.

The accessions BL-301, BL-302, BL-313I, POLKUR04-6 can be used as a source of fruits-firmness.

The landrace KOB-3 distinguished by elongated (9 cm length), firm fruits, thick pericarp and easy detach from the pedicel can be used as a good source in breeding.

Interesting for amateur breeding is landrace KOB-2 with bell-shaped of fruits.

The tomato collection is designated to preserve the germplasm against disappearance, as well as a rich source of genetic variability.

Table 1. Characterization of examined tomato accessions

<table>
<thead>
<tr>
<th>Collection</th>
<th>Fruit</th>
<th>Berries</th>
<th>Flower</th>
<th>Earliness</th>
<th>Earliness uniformity</th>
<th>Leaf</th>
<th>Leaf uniformity</th>
<th>Fruit shape</th>
<th>Fleshy volume</th>
<th>Firmness</th>
<th>Fruit size</th>
<th>Easiness of fruit to detach</th>
<th>Number of locules</th>
<th>Thickness of fruit wall</th>
<th>Number of seeds per locule</th>
<th>Number of locules or pericarp</th>
<th>Skin color</th>
<th>Fruit color</th>
<th>Number of pericarp</th>
<th>Potential use</th>
<th>Accession</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Yorker</td>
<td>1</td>
<td>3.5</td>
<td>2</td>
<td>4</td>
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<td>3</td>
<td>3</td>
<td>POLKUR04-70</td>
</tr>
<tr>
<td>POLKUR04-30</td>
<td>2</td>
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<td>4</td>
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<td>POLKUR04-11</td>
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<tr>
<td>KOS-15</td>
<td>1</td>
<td>3.5</td>
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<td>4</td>
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<td>3</td>
<td>3</td>
<td>3</td>
<td>POLKUR04-15</td>
</tr>
</tbody>
</table>

Some of characteristic of tomato fruits:

1. Lack of symptoms of blossom-end rot - 9 accessions; moderate - 10 acc.; many symptoms - 7 acc.
2. Lack of greenback - 6 acc.; greenback disappeared after ripening - 10 acc.; remained after ripening - 8 acc.
3. Easy detach from the pedicel - 17 acc.; hard - 6 acc.
5. Size: small - 2 acc.; (KOS-13I, POLKUR04-70); large and very large - 5 acc. (POLKUR04-11, POLKUR04-30, KOS-5B, POLPON04-12, S-01B)
7. Colour: raspberry-red - 6 acc.; red - 17 acc.
8. Intensive and homogeneous flash colour - 9 acc.; very light flesh colour - POLKUR04-6.
9. Good quality of thick pericarp - 5 acc. (POLPON04-12, POLKUR04-11, POLKUR04-6, KOS-5B, KOB-3, POLPON04-12)
10. Puffiness appearance: slight - 4 acc. (POLKUR04-10, KOS-5B, KOB-3, POLPON04-12)
11. Firmness: very firm - 4 acc. (BL301, BL302, BL313I, POLKUR04-6); firm - 13 acc.; soft - 6 acc.

Conclusions

- Numerous accessions can be used as a valuable material in the breeding of new cultivars for fresh market and processing.
- The most valuable were landraces BL-301, BL-313I, KOS-15 characterized by good shape, firm and healthy fruits and good flesh intensity. These accessions can be utilized in breeding for processing.
- The accessions BL-301, BL-302, BL-313I, POLKUR04-6 can be used as a source of fruits-firmness.
- The landrace KOB-3 distinguished by elongated (9 cm length), firm fruits, thick pericarp and easy detach from the pedicel can be used as a good source in breeding.
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