The Israeli Mango Breeding program and its new cultivars

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Acknowledgments

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• David Saada
• Reuven Dor
• Michael Noy
• Ami Keynan

Funding:

• Israeli Ministry of Agriculture
Mango in Israel - climate

• Israel is one of the world’s most Northern countries having commercial mango production.

• Lower temperatures during winter, and events of frost limit mango orchards to restricted areas, and occasionally cause damages.

• Unpredictable weather conditions (both very warm and dry events and cold periods) during spring are not ideal conditions for mango flowering and fruit settings.

• The warm and dry summer conditions during fruit development and ripening enables high quality fruits clean of diseases and
Mango in Israel
soil and water conditions

• **Soil and water conditions**
  – Calcareous soil – Ph above 8.0
  – iron and zinc deficiency

• **Irrigation water**
  – Low quantity and quality of the water
  – Salinity problems (water and soils)
Ripening calendar for Israeli cultivars

- Keitt
- Tomy Atkins
- Maya
- Kent
- Keitt
Research aims

• Development of diverse new elite mango cultivars with high fruit qualities, high yields, long shelf life, that will fit the growth conditions of Israel’s growing regions.

• Focusing on European tastes and demands

• Extending the fruit repining season and expanding to new market demands.
Classical breeding in fruit crops

• Breeding is based on generation of a large germplasm and selection of “interesting” lines
• Hereditability in fruit crops is complex and not completely understood.
• High levels of heterozygosity.
• Long juvenile stage
Use of genetic diversity for mango breeding
Use of genetic diversity for mango breeding

Introduced cultivar plot

- Indian
- East Asian
- Floridan
- Australian
- South African
- Central American

Previous breeding products

- Some turned into commercial products.
- Others disqualified as commercial cultivars, but carry interesting combinations of traits.
Stages in mango breeding

(1) Generation of seedlings from selected parents
(2) Selection of seedling populations
(3) Grafting interesting lines and selection under “comercial field” conditions
(4) Evaluation of outstanding lines in semi-commercial plots.
“Controlled” vs. “Free” pollination
Most seedlings are generated through free pollination. Seeds are collected from plots with high phenotypic diversity.
## Time tables

<table>
<thead>
<tr>
<th>Description</th>
<th>Time Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seedlings</td>
<td>1 – 2 years</td>
</tr>
<tr>
<td>First fruiting</td>
<td>3 – 5 years</td>
</tr>
<tr>
<td>Promising identification</td>
<td>2 – 3 years</td>
</tr>
<tr>
<td>Field testing</td>
<td>2 – 3 years</td>
</tr>
<tr>
<td>Semi-commercial</td>
<td>3 – 5 years</td>
</tr>
</tbody>
</table>

**Time for commercial-recommendation:** 11 – 18 years
Naomi
Local selection
Shelly
Shelly

Tango

Very tasteful cultivar, Bright colors, special shape.
Early cultivar—heart shape, attractive — 600 gr. Good quality — few hectares in Israel.
Orli

Approximately 450 gr. Similar in few hectares in Israel
Attractive appearance
High yield – 450 gr.
Approximately 150 hectares planted in Israel
Early cultivar – high quality, attractive color, appealing appearance, very special teste.
Noa
Noa

a colorful alternative to Keitt?

Middle to late ripening, large (480-810 gr), colorful, elongated. Excellent interior quality.
Ripening calendar for Israeli cultivars

- Orli
- Agam
- Noa
- Tali
- Omer
- Tango
- Shelly
- Maya
- Kent
- Tommy Atkins
- Keitt

Additional very early cultivars:
- Tali
- Omer
- Shelly
- Maya
- Kent
- Tommy Atkins

Additional very late cultivars:
- Orli
- Agam
- Noa
- Tango
- Keitt

Timeline:
- June
- July
- August
- September
- October
- November
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