THE EVALUATION OF PROMISING NEW MANGO CULTIVARS AND SELECTIONS IN DIFFERENT CLIMATIC AREAS (2017/2018)

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SAMGA Mango Day at Fairview Hotel, Tzaneen, 19 July 2019
INTRODUCTION

OBJECTIVES

→ Evaluate hybrids from Breeding Program.
→ Establish promising selections in different climatic areas (Co-workers).
→ Evaluate all bearing trees at four co-workers.
→ Identify best performers, with evaluation groups, to be released to the industry.
MATERIAL & METHODS

STRATEGY ➔ BREEDING PROGRAM

Nursery ± 1000 selections ← NELSPRUIT

→ MOHLATSI ➔ Nursery ± 200 Selections

± 1700 Selections established ➔ 831 Selections established

545 Selections ➔ 90 Selections

OPEN POLLINATED

Locations ➔ Nelspruit
→ Mohlatsi Farm (Hoedspruit)
→ Tamarak Mango Estate (Clanwilliam)
→ Radley Landgoed (Malalane)
→ Lapland (Tzaneen)
MATERIAL & METHODS cont.

<table>
<thead>
<tr>
<th>LAYOUT</th>
<th>PHASE I</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NELSPRUIT</td>
</tr>
<tr>
<td></td>
<td>± 1700 Selections</td>
</tr>
<tr>
<td></td>
<td>± 545 Selections not evaluated</td>
</tr>
<tr>
<td></td>
<td>2018/2019 → 1 Phase I Ext.</td>
</tr>
</tbody>
</table>
LAYOUT - PHASE I

MOHLATSI

Topworked 2013 + 2014

831 Selections
(90 Selections – Not evaluated)

First evaluation: 2015/16
→ 28 = Phase I Ext.
→ 7 = Phase II
Second evaluation: 2016/17
→ 12 = Phase I Ext.
→ 11 = Phase II
Third evaluation: 2017/18
→ 12 = Phase I Ext.
→ 0 = Phase II
Fourth evaluation: 2018/19
→ 16 = Phase I Ext.
→ 1 = Phase II
MATERIAL & METHODS cont.

LAYOUT
SELECTIONS AT EACH LOCALITY

PHASE I EXT.
Mohlatsi ▼ 84 Selections

PHASE II
Mohlatsi ▼ 25 Selections
Lapland ▼ 37 Selections
Tamarak Mango Estate ▼ 48 Selections
Radley Landgoed ▼ 46 Selections
## RESULTS & DISCUSSION

### EVALUATION & TOPWORK ACTIONS 2018/19

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>SELECTIONS TOPWORKED</th>
<th>EVALUATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoedspruit</td>
<td>23 October 2018</td>
<td>January &amp; February (2) 2019</td>
</tr>
<tr>
<td>Malalane</td>
<td>1 March 2019</td>
<td>January 2019</td>
</tr>
<tr>
<td>Clanwilliam</td>
<td>12 December 2018</td>
<td>April 2019</td>
</tr>
<tr>
<td>Tzaneen</td>
<td>28 February 2019</td>
<td>-</td>
</tr>
</tbody>
</table>
PHASE I

EVALUATION DATES → 23 January 2019
→ 6 February 2019
→ 27 February 2019

<table>
<thead>
<tr>
<th>BLOCK</th>
<th>Selections Evaluated</th>
<th>Results</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH32</td>
<td>58</td>
<td>phase I Ext.</td>
<td>3 Selections</td>
</tr>
<tr>
<td>CH31</td>
<td>63</td>
<td>phase I Ext.</td>
<td>3 Selections</td>
</tr>
<tr>
<td>CH16</td>
<td>79</td>
<td>phase II</td>
<td>1 Selection</td>
</tr>
<tr>
<td>CH33</td>
<td>168</td>
<td>phase I Ext.</td>
<td>5 Selections</td>
</tr>
</tbody>
</table>
RESULTS & DISCUSSION cont.

PHASE I EXT.
MOHLATSI FARM
BLOCK CH32, CH31, CH16 & CH33

368 Selections evaluated

Phase I Ext.                       Phase II

13 Selections                     1 Selection
                                       (CH31-Q12)
RESULTS & DISCUSSION cont.

**CH31-Q12**

Evaluation date: 6 March 2019  
(Topworked November 2013)
- Medium fruit size
- Taste: 6
- Fibre: 6
- Aroma: 6
- Brix: 16.8
- Remarks: Juicy, very sweet.

**CH16-F33+34**

Evaluation date: 14 February 2019  
(Topworked November 2013)
- Large fruit size
- Taste: 7
- Fibre: 6
- Aroma: 7
- Brix: 11.3
RESULTS & DISCUSSION cont.

CH31-K18

Evaluation date: 18 February 2019
(Topworked November 2013)
- Medium fruit size
- Taste: 8
- Fibre: 6
- Aroma: 7
- Brix: 13.8
- Remarks: Very good taste, sweet.

PHASE I EXT.

L3-S27

Evaluation date: 22 February 2019
(Nelspruit seedling)
- Medium to Large fruit size
- Taste: 7
- Fibre: 6
- Aroma: 7
- Brix: 19.2
- Remarks: Good external colour, few lenticels, good taste, very sweet.
RESULTS & DISCUSSION cont.

PHASE II
MOHLATSI FARM

25 Selections under evaluation
12 Selections culled
3 Selections to be included

<table>
<thead>
<tr>
<th>Selection</th>
<th>No. of fruit bearing trees</th>
<th>Total number of fruit</th>
<th>Total yield (kg)</th>
<th>Total yield (t/ha)</th>
<th>Average yield (kg/tree)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH31-M21&amp;22</td>
<td>10</td>
<td>1085</td>
<td>456.6</td>
<td>38.0</td>
<td>45.7</td>
</tr>
<tr>
<td>C2D2-Y3</td>
<td>9</td>
<td>519</td>
<td>318.2</td>
<td>29.5</td>
<td>35.4</td>
</tr>
<tr>
<td>G10</td>
<td>8</td>
<td>670</td>
<td>272.3</td>
<td>28.3</td>
<td>34.0</td>
</tr>
<tr>
<td>AM12</td>
<td>10</td>
<td>678</td>
<td>281.4</td>
<td>23.4</td>
<td>28.1</td>
</tr>
<tr>
<td>C2D2-D23</td>
<td>10</td>
<td>407</td>
<td>225.7</td>
<td>18.8</td>
<td>22.6</td>
</tr>
<tr>
<td>CH31-P11&amp;12</td>
<td>10</td>
<td>559</td>
<td>223.8</td>
<td>18.6</td>
<td>22.4</td>
</tr>
<tr>
<td>CH31-O11&amp;12</td>
<td>10</td>
<td>289</td>
<td>180.9</td>
<td>15.0</td>
<td>18.9</td>
</tr>
<tr>
<td>E9-9/7</td>
<td>5</td>
<td>477</td>
<td>94.6</td>
<td>15.8</td>
<td>18.9</td>
</tr>
<tr>
<td>K3-S25</td>
<td>10</td>
<td>179</td>
<td>187.2</td>
<td>15.6</td>
<td>18.7</td>
</tr>
<tr>
<td>CH31-P16</td>
<td>10</td>
<td>-</td>
<td>183.7</td>
<td>15.3</td>
<td>18.4</td>
</tr>
<tr>
<td>E10-5/18</td>
<td>10</td>
<td>225</td>
<td>171.5</td>
<td>14.3</td>
<td>17.2</td>
</tr>
<tr>
<td>K3-K43</td>
<td>7</td>
<td>180</td>
<td>82.0</td>
<td>9.8</td>
<td>11.7</td>
</tr>
<tr>
<td>P3</td>
<td>6</td>
<td>190</td>
<td>64.2</td>
<td>8.9</td>
<td>10.7</td>
</tr>
<tr>
<td>B2-J17</td>
<td>9</td>
<td>81</td>
<td>48.6</td>
<td>4.5</td>
<td>5.4</td>
</tr>
</tbody>
</table>
RESULTS & DISCUSSION cont.

PHASE II
MANGO CULTIVAR DAY – BAVARIA ESTATE, HOEDSPRUIT
8 FEBRUARY 2019

- Promising selections from breeding program
- Promising selections from various producers
## RESULTS & DISCUSSION cont.

### PHASE II

**MANGO CULTIVAR DAY – BAVARIA ESTATE, HOEDSPRUIT**

<table>
<thead>
<tr>
<th>Selection</th>
<th>Fruit shape</th>
<th>Fruit size</th>
<th>Internal colour</th>
<th>External colour</th>
<th>Taste</th>
<th>Fibre</th>
<th>Brix</th>
<th>Average score</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH30-G52&amp;53</td>
<td>8.6</td>
<td>7.2</td>
<td>6.9</td>
<td>7.7</td>
<td>5.7</td>
<td>6.2</td>
<td>12.8</td>
<td>7.1</td>
<td>Maybe overripe, not sweet, good colour, best on show.</td>
</tr>
<tr>
<td>CH31-M17&amp;18</td>
<td>6.9</td>
<td>8.4</td>
<td>8.6</td>
<td>7.2</td>
<td>5.5</td>
<td>6.3</td>
<td>13.6</td>
<td>7.1</td>
<td>Good colour.</td>
</tr>
<tr>
<td>CH31-P11&amp;12</td>
<td>7.1</td>
<td>6.1</td>
<td>6.6</td>
<td>8.9</td>
<td>4.5</td>
<td>5.7</td>
<td>10.5</td>
<td>6.5</td>
<td>Didn’t taste too good, nice soft eating, good overall.</td>
</tr>
<tr>
<td>CH32-E7</td>
<td>6.4</td>
<td>6.1</td>
<td>6.4</td>
<td>7.6</td>
<td>5.5</td>
<td>6.3</td>
<td>13.7</td>
<td>6.4</td>
<td>Sweet, good taste, good eating &amp; size.</td>
</tr>
<tr>
<td>C5-O3</td>
<td>7.1</td>
<td>6.7</td>
<td>6.0</td>
<td>6.4</td>
<td>5.5</td>
<td>6.1</td>
<td>15.2</td>
<td>6.3</td>
<td>Good taste, fruity taste.</td>
</tr>
<tr>
<td>CH31-N7&amp;8</td>
<td>7.4</td>
<td>6.4</td>
<td>6.3</td>
<td>6.8</td>
<td>5.3</td>
<td>5.8</td>
<td>13.8</td>
<td>6.3</td>
<td>Attractive fruit, average, good fruit size with better shape.</td>
</tr>
<tr>
<td>B3-N6</td>
<td>6.9</td>
<td>6.5</td>
<td>5.4</td>
<td>7.0</td>
<td>5.4</td>
<td>5.3</td>
<td>15.1</td>
<td>6.1</td>
<td>Average eat, good colour.</td>
</tr>
<tr>
<td>CH30-G35&amp;36</td>
<td>6.3</td>
<td>5.0</td>
<td>8.5</td>
<td>5.7</td>
<td>5.2</td>
<td>5.8</td>
<td>15.2</td>
<td>6.1</td>
<td>Not great, excellent.</td>
</tr>
<tr>
<td>CH31-N15&amp;16</td>
<td>8.9</td>
<td>6.1</td>
<td>5.3</td>
<td>7.2</td>
<td>4.0</td>
<td>5.1</td>
<td>13.2</td>
<td>6.1</td>
<td>Soft smooth flesh, nice.</td>
</tr>
<tr>
<td>CH31-M21&amp;22</td>
<td>7.3</td>
<td>6.4</td>
<td>6.2</td>
<td>6.7</td>
<td>4.4</td>
<td>5.8</td>
<td>13.3</td>
<td>6.1</td>
<td>Nice, average, taste disappointing.</td>
</tr>
<tr>
<td>CH32-D9&amp;10</td>
<td>6.7</td>
<td>5.9</td>
<td>5.5</td>
<td>5.5</td>
<td>6.1</td>
<td>5.8</td>
<td>13.7</td>
<td>5.9</td>
<td>Good, smooth fruit, bland taste.</td>
</tr>
<tr>
<td>B3-I17</td>
<td>7.0</td>
<td>6.1</td>
<td>5.8</td>
<td>6.0</td>
<td>4.0</td>
<td>5.9</td>
<td>11.8</td>
<td>5.8</td>
<td>Bland taste, great tasting, no fibre, smooth.</td>
</tr>
<tr>
<td>A4-P17</td>
<td>6.9</td>
<td>5.9</td>
<td>5.8</td>
<td>4.8</td>
<td>5.2</td>
<td>6.2</td>
<td>12.9</td>
<td>5.8</td>
<td>Not very sweet but creamy, good colour.</td>
</tr>
</tbody>
</table>
PHASE II
TAMARAK MANGO ESTATE – CLANWILLIAM

- 48 Selections in trial
- 3 New selections to be included
- Third crop → 11 Selections (Breeding program)
  → 3 Cultivars
- Evaluation → 3 April 2019
## RESULTS & DISCUSSION cont.

### PHASE II

**TAMARAK MANGO ESTATE – CLANWILLIAM**

<table>
<thead>
<tr>
<th>Selection</th>
<th>Fruit shape</th>
<th>Fruit size</th>
<th>Internal colour</th>
<th>External colour</th>
<th>Taste</th>
<th>Fibre</th>
<th>Brix</th>
<th>Average score</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>B3-L17</td>
<td>7.6</td>
<td>7.4</td>
<td>7.4</td>
<td>8.4</td>
<td>8.4</td>
<td>7.8</td>
<td>14.6</td>
<td>7.8</td>
<td>Slightly pointed, attractive colour, nice tropical smell and taste.</td>
</tr>
<tr>
<td>Tropica</td>
<td>6.8</td>
<td>7.2</td>
<td>8.2</td>
<td>8.6</td>
<td>8.0</td>
<td>8.2</td>
<td>16.9</td>
<td>7.8</td>
<td>Pointed, excellent taste like Heidi, firm fresh fruit.</td>
</tr>
<tr>
<td>A4-M2</td>
<td>5.8</td>
<td>7.8</td>
<td>8.4</td>
<td>8.8</td>
<td>7.8</td>
<td>8.2</td>
<td>17.1</td>
<td>7.8</td>
<td>Sharply pointed, attractive fruit, mild sour taste, firm fruit flesh.</td>
</tr>
<tr>
<td>Shelly</td>
<td>7.6</td>
<td>7.4</td>
<td>8.0</td>
<td>8.4</td>
<td>6.4</td>
<td>7.4</td>
<td>9.8</td>
<td>7.5</td>
<td>Sour taste, not fully ripe, good external colour.</td>
</tr>
<tr>
<td>B3-J4</td>
<td>6.8</td>
<td>7.6</td>
<td>7.2</td>
<td>8.0</td>
<td>7.2</td>
<td>7.6</td>
<td>16.4</td>
<td>7.4</td>
<td>Firm fruit, good texture almost like Sensation, sour, peachy taste.</td>
</tr>
<tr>
<td>Lormei</td>
<td>7.6</td>
<td>7.8</td>
<td>7.6</td>
<td>7.4</td>
<td>7.2</td>
<td>6.4</td>
<td>12.0</td>
<td>7.3</td>
<td>Attractive fruit, end of fruit tends to become soft, good taste.</td>
</tr>
<tr>
<td>L2-M51</td>
<td>7.0</td>
<td>7.8</td>
<td>7.0</td>
<td>6.2</td>
<td>7.0</td>
<td>7.8</td>
<td>16.1</td>
<td>7.1</td>
<td>Good fruit shape, attractive fruit, sweet taste.</td>
</tr>
<tr>
<td>CH31-P16</td>
<td>7.2</td>
<td>7.2</td>
<td>6.8</td>
<td>7.0</td>
<td>5.0</td>
<td>5.6</td>
<td>14.6</td>
<td>6.5</td>
<td>Watery taste, was in cold storage, only 1 fruit, coarse lenticels.</td>
</tr>
<tr>
<td>B2-C38</td>
<td>8.0</td>
<td>8.0</td>
<td>6.4</td>
<td>6.8</td>
<td>4.0</td>
<td>5.0</td>
<td>12.1</td>
<td>6.4</td>
<td>Good yield &amp; shape, few lenticels, too few fibres, watery taste.</td>
</tr>
<tr>
<td>A4-P12</td>
<td>7.6</td>
<td>7.0</td>
<td>7.0</td>
<td>6.6</td>
<td>4.0</td>
<td>5.6</td>
<td>11.3</td>
<td>6.3</td>
<td>Poor taste but attractive fruit, too few fibres, end of fruit becomes soft.</td>
</tr>
<tr>
<td>C2D2-U1</td>
<td>6.8</td>
<td>5.6</td>
<td>7.2</td>
<td>5.6</td>
<td>5.0</td>
<td>5.4</td>
<td>9.2</td>
<td>5.9</td>
<td>Was in cold storage, too few fibres, flat taste, maybe harvested too early.</td>
</tr>
</tbody>
</table>
PHASE II
TAMARAK MANGO ESTATE – CLANWILLIAM

Results & Discussion cont.

B3-L17

Evaluation date: 3 April 2019
(Topworked December 2014)

▪ Small to Medium fruit size
▪ Taste: 8.4
▪ Fibre: 7.8
▪ External colour: 8.4
▪ Average score: 7.8
▪ Brix: 14.6
▪ Remarks: Slightly pointed, attractive colour, nice tropical smell and taste.
PHASE II
TAMARAK MANGO ESTATE – CLANWILLIAM

A4-M2

Evaluation date: 3 April 2019
(Topworked December 2014)

- Medium fruit size
- Taste: 7.8
- Fibre: 8.2
- External colour: 8.8
- Average score: 7.8
- Brix: 17.1
- Remarks: Sharply pointed, attractive fruit, mild sour taste, firm fruit flesh.
RESULTS & DISCUSSION cont.

PHASE II
RADLEY ESTATE – MALALANE

- 46 Selections in trial
- 5 New selections to be included
- Second crop
- Evaluation → 29 January 2019
### RESULTS & DISCUSSION cont.

**PHASE II**  
**RADLEY ESTATE – MALALANE**

<table>
<thead>
<tr>
<th>Selection</th>
<th>Fruit shape</th>
<th>Fruit size</th>
<th>Internal colour</th>
<th>External colour</th>
<th>Taste</th>
<th>Fibre</th>
<th>Brix</th>
<th>Average score</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>C5-N26</td>
<td>6.7</td>
<td>7.7</td>
<td>6.4</td>
<td>8.1</td>
<td>5.5</td>
<td>7.9</td>
<td>13.7</td>
<td>7.0</td>
<td>Best? Not a good taste, flat taste.</td>
</tr>
<tr>
<td>C2D2-Y3</td>
<td>7.0</td>
<td>6.6</td>
<td>6.8</td>
<td>7.2</td>
<td>4.8</td>
<td>6.6</td>
<td>11.8</td>
<td>6.5</td>
<td>Mildly sour taste but good.</td>
</tr>
<tr>
<td>C5-J31</td>
<td>5.3</td>
<td>6.1</td>
<td>5.9</td>
<td>6.2</td>
<td>6.6</td>
<td>7.1</td>
<td>12.8</td>
<td>6.2</td>
<td>Good, good taste.</td>
</tr>
<tr>
<td>E10-5/18</td>
<td>6.6</td>
<td>6.2</td>
<td>6.2</td>
<td>6.1</td>
<td>4.8</td>
<td>6.5</td>
<td>11.8</td>
<td>6.0</td>
<td>Good fragrance, watery taste, Kent shape, medium size, good for packing.</td>
</tr>
<tr>
<td>A4-R4</td>
<td>7.1</td>
<td>6.8</td>
<td>5.4</td>
<td>5.0</td>
<td>5.4</td>
<td>6.4</td>
<td>13.7</td>
<td>6.0</td>
<td>Green external colour but nice yellow colour when ripe.</td>
</tr>
<tr>
<td>B3-H11</td>
<td>6.0</td>
<td>3.6</td>
<td>6.9</td>
<td>5.8</td>
<td>5.9</td>
<td>7.1</td>
<td>13.3</td>
<td>5.9</td>
<td>Saggy internal, brownish external colour, small fruit, remove fruit to increase size?</td>
</tr>
<tr>
<td>CH32-D9&amp;10</td>
<td>6.9</td>
<td>6.3</td>
<td>4.8</td>
<td>6.1</td>
<td>3.4</td>
<td>6.4</td>
<td>11.6</td>
<td>5.6</td>
<td>Not ripe, sour taste.</td>
</tr>
<tr>
<td>B3-H3</td>
<td>6.0</td>
<td>3.7</td>
<td>6.3</td>
<td>5.4</td>
<td>5.6</td>
<td>6.8</td>
<td>12.2</td>
<td>5.6</td>
<td>Small fruit, count 14, slight blush, vigorous.</td>
</tr>
<tr>
<td>C5-O23</td>
<td>5.3</td>
<td>5.5</td>
<td>6.0</td>
<td>5.4</td>
<td>5.1</td>
<td>5.9</td>
<td>11.2</td>
<td>5.5</td>
<td>-</td>
</tr>
<tr>
<td>C5-N4</td>
<td>5.9</td>
<td>5.6</td>
<td>6.0</td>
<td>4.1</td>
<td>4.9</td>
<td>6.6</td>
<td>12.7</td>
<td>5.5</td>
<td>Sweet.</td>
</tr>
<tr>
<td>B3-H7</td>
<td>4.2</td>
<td>5.3</td>
<td>5.4</td>
<td>3.5</td>
<td>5.2</td>
<td>7.1</td>
<td>13.5</td>
<td>5.1</td>
<td>Poor taste, yellow colour, good taste. Not for S.A.</td>
</tr>
<tr>
<td>A4-O8</td>
<td>5.6</td>
<td>5.0</td>
<td>6.2</td>
<td>3.4</td>
<td>4.4</td>
<td>5.6</td>
<td>11.9</td>
<td>5.0</td>
<td>Sweet, dark colour.</td>
</tr>
</tbody>
</table>
PHASE II
RADLEY ESTATE – MALALANE

Evaluation date: 29 January 2019
(Topworked April 2015)

- Medium fruit size
- Taste: 4.8
- Fibre: 6.6
- External colour: 7.2
- Average score: 6.5
- Brix: 11.8
- Remarks: Mildly sour taste but good.
RESULTS & DISCUSSION cont.

PHASE II
RADLEY ESTATE – MALALANE

Evaluation date: 29 January 2019
(Topworked April 2015)

- Medium to Large fruit size
- Taste: 8
- Fruit size: 3/3
- External appearance: 2/3
- Fruit shape: 3/3
- Remarks: Fibreless, poor blush, uneven ripeness, very good taste.
RESULTS & DISCUSSION cont.

PHASE II
LAPLAND – TZANEEN

- 37 Selections in trial
- 5 New selections to be included
- No crop yet
CONCLUSION

MOHLATSI → Fourth crop of Phase I trees; 3 evaluations in 2019
    → 368 Selections evaluated.
    → Third evaluation of Phase II trees

TAMARAK MANGO ESTATE → Third crop; 11 selections evaluated

RADLEY ESTATE → Second crop: 12/34 selections evaluated
    → Establish 7 new promising selections

LAPLAND → Establish 7 promising selections
FUTURE STRATEGY

- Evaluate bearing Phase I, Phase I extension and Phase II trees at Mohlatsi Farm.
- Evaluate all bearing Phase II trees at Clanwilliam, Tzaneen and Malalane.
- Expand Phase II selections at co-workers if desired.
- Establish Phase I trees Mohlatsi.
- Continue speeding up the cultivar release processes.
ACKNOWLEDGEMENTS

- ARC-TSC for funding of Mango Breeding program.
- SAMGA for funding the Evaluation project.
- Jaco Fivaz (Mohlatsi Farm) for making land available for the bulk of the breeding stages.
- Bernie van den Heever, Renald Radley & Theuns Botha for their inputs & the use of their farms to establish evaluation blocks.
- DTI-THRIP for financial contribution towards the Mango Breeding program.
- Research team.