Blackberry trials in Denmark

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1,5 m distance in row
6 main shoots/plant
Tied up to 2 m height
Side branches trimmed to app. 20 cm
Terminal shoots left over winter to avoid budbreak in late summer and ensure flower bud formation in the entire shoot length
Recording growth, frost damage, flowering time, yield, berry size, problems with insects/fungi etc.

8 varieties x 5 blocks x 3 plants/plot
Conventional and organic tunnel production
Plast cover from late April to Mid October
Winter 2011-2012 coldest for over 20 years (-24°C)
Winter 2012-2013 long frost period
**Fertilizer** – organic given three times, April, June, August, 15 g N/plant (Binadan 5-2-4 Chicken manure) in dried pills, positioned on top of soil below irrigation drips

Conventional: liquid fertigation weekly

<table>
<thead>
<tr>
<th>Cultivar trial</th>
<th>N kg/ha</th>
<th>P2O5 kg/ha</th>
<th>K2O kg/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>80</td>
<td>20</td>
<td>120</td>
</tr>
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</table>

**Drip irrigation** once a day, 2 liter per plant

**Pollination** with bumblebees during start of flowering season (week 22)

**Biological control treatments**
Every two weeks apply 1 can of each of
Ambly, Cucumeris (25,000 per can) against whiteflies (Thrips)
Aphidus (2000 per can) against Aphids
Phyto. Predator mites (500 per can) against spider mites.

When higher Aphid attack apply double Aphidus treatment

Ferromol against snails June, August, September.
13 June and 11 July Spruzit (0.10 % pyretrum) and Duxon (insect soap 2 %) against Aphids
Loch Ness
Loch Tay
Nachez
Reuben – primocane type

Start flowering on new shoots midle July

2011 trial - Reuben, tunnel 19

Accumulated yield all plants, g

- 500  1,000  1,500  2,000  2,500  3,000  3,500  4,000  4,500
   July  August  Month  September
Conventional, 2012

Accumulated yield g/ plant

Cultivars

- Loch Ness
- Loch Tay
- Karaka Black
- Navaho
- Nachez
- Chester
- Helen
- Loch Maree

[Bar chart showing accumulated yield for different cultivars]
Organic, 2012

Cultivars

Accumulated yield/plant, g

Loch Ness
Loch Tay
Karaka Black
Navaho
Nachez
Chester
Helen
Loch Maree

4400 g in 2013
Berry quality aspects

Loch Ness - Loch Tay – Karaka Black – Navaho – Nachez - Chester – Helen - Loch Maree

Sooty mold  Heat damage ?  Tip immaturity
### 2012 Organic

![Bar chart showing mean sooty mold index (0-1-2) for different cultivars.]

### 2013 organic

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Flowering main stem diam mm</th>
<th>No of flowering side shoots/main stem</th>
<th>Lenght of flowering side shoots, cm</th>
<th>No of single flowers/fruits/flower side shoot</th>
<th>Aphid attack (0-1-2)</th>
<th>Sooty mold attack (0-1-2)</th>
<th>Caterpillar attack (0-1-2)</th>
<th>Thrips attack</th>
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<tbody>
<tr>
<td>Loch Ness</td>
<td>14</td>
<td>21</td>
<td>38</td>
<td>14</td>
<td>0,07</td>
<td>0,00</td>
<td>0,79</td>
<td>1,36</td>
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<tr>
<td>Loch Tay</td>
<td>16</td>
<td>20</td>
<td>40</td>
<td>12</td>
<td>0,20</td>
<td>0,00</td>
<td>0,53</td>
<td>1,07</td>
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<tr>
<td>Karaka Black</td>
<td>11</td>
<td>15</td>
<td>26</td>
<td>7</td>
<td>1,73</td>
<td>1,00</td>
<td>0,73</td>
<td>1,13</td>
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<tr>
<td>Navaho</td>
<td>21</td>
<td>20</td>
<td>75</td>
<td>31</td>
<td>0,07</td>
<td>0,00</td>
<td>0,40</td>
<td>1,07</td>
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<tr>
<td>Nachez</td>
<td>19</td>
<td>19</td>
<td>53</td>
<td>6</td>
<td>0,00</td>
<td>0,00</td>
<td>1,07</td>
<td>0,80</td>
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<tr>
<td>Chester</td>
<td>21</td>
<td>20</td>
<td>65</td>
<td>37</td>
<td>0,07</td>
<td>0,00</td>
<td>0,67</td>
<td>1,00</td>
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<tr>
<td>Helen</td>
<td>14</td>
<td>18</td>
<td>12</td>
<td>7</td>
<td>0,40</td>
<td>0,00</td>
<td>0,53</td>
<td>0,87</td>
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<tr>
<td>Loch Maree</td>
<td>9</td>
<td>24</td>
<td>27</td>
<td>12</td>
<td>0,20</td>
<td>0,00</td>
<td>0,33</td>
<td>0,80</td>
</tr>
</tbody>
</table>
**2012 Organic**

- **Total acidity or Brix**
  - Cultivars: Loch Ness, Loch Tay, Karaka Black, Navaho, Nachez, Chester, Helen, Loch Maree
  - Legend: Total acidity, malic acid (mg/g) and Brix

- **Total anthocyanin content (mg/100g)**
  - Cultivars: Loch Ness, Loch Tay, Karaka Black, Navaho, Nachez, Chester, Helen, Loch Maree
Private consumers’ taste preference at Food Festival 5-7 September 2013
Conclusions

- Chester gave the highest yields in organic cultivation followed by Navaho, Loch Tay, Loch Ness about giving the same yield.
- Nachez gave the largest berries followed by Karaka Black and Loch Ness
- Helen were most susceptible to frost damage, followed by Loch Ness and Karaka black. Loch Maree are not yet evaluated finally due to late planting but seem to give intermediate yields and harvest time.
- Conventional cultivation gave serious frost damage, whereas organic cultivation seemed to protect most cultivars in this trial.
- The harvest season covers from mid July to mid October, with peak harvest in August-September. Loch Tay gives the earliest crop to harvest and Chester and Navaho the latest.
- Aphid attack was difficult to control efficiently and gave problems with sooty mold on berry surface mostly in Karaka Black but also in other cultivars.
- Yield between 8 and 12 kg pr plant/year can be expected in the best varieties.

2011 approx 60 samples sent to JHI for analysis
2012 Approx 60 samples sent to JHI for analysis
2013 40 samples for analysis at AU (and JHI?)