

Scanning report [Marianne Bertelsen, AU Denmark]

Author: [Marianne Bertelsen, Senior Scientist, Department of Food, Aarhus University (AU)
Tel.: +45 87158328 Email: marianne.bertelsen@food.au.dk

Country: Denmark

NUTS 3 region(s)¹: DK011 (Copenhagen), DK012 (Copenhagen and its environs), DK013 (North Zealand), DK014 (Bornholm), DK021 (East Zealand), DK022 (West- and South Zealand), DK031 (Funen), DK032 (South Jutland), DK041 (West Jutland), DK042 (East Jutland), DK050 (North Jutland).

WP no. and title: **3 – Reduction in pesticides residues**

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Source materials and methodology

Pesticide residues in fruit is a topic of concern to the public, media and hence politicians in Denmark. The Department of Food has since 2008 developed research projects that aimed at understanding and reducing pesticide residues in Danish fruit. In the beginning research focused on understanding when and which compounds were more likely to leave residues. From 2010 and onwards experiments aimed at eliminating residues have been conducted in the research orchard of the Department of Food. The research has been financed by the Danish Ministry of food and agriculture.

Inspiration and experience has been sourced from international collaboration with the EUFRIN workgroup on 'Sustainable fruit production to minimize residues', Obstbauzentrum Jork (D) and from work conducted in East Malling (UK).

Best practice findings

The aim is to report about the best European practices to reduce pesticides residues on fruits.

Scientists at the Department of Food Science have demonstrated (on research scale), that with optimal spraying of fruit in the period before fruiting, it is possible to avoid spraying (except for organic compounds) in the period when the fruits develop without this leading to large yield losses and pesticide residues in the fruit.

In the ongoing project DAFRUS, these research results are subjected to a reality check in three commercial fruit orchards. Here the strategy will involve different disease pressures, variety fruit combinations, microclimates and spraying agents. This will result in a better basis for evaluating the extent and the costs of the implementation of the pesticide-free strategy in the industry. The scientist believe that the biggest challenge to the pesticide-free strategy will be fruit rots as these infect the fruit during the last part of fruit development and therefore cannot be controlled before fruitset. Alternative tools like hot-water treatment are therefore believed to be a necessary prerequisite that need to be implemented for growers who choose to follow the residue-free strategy.

In the project 'Less waste and better storability' scientist at the Department of Food Science the scientists have shown that hot water treatment of fruits after harvest can reduce rot diseases to practically the same extent as fungicide sprays given in the orchard. Pesticides used against fruit rots are sure to leave a residue on the fruit because they are given just prior to harvest. In collaboration with engineers a new machine for hot water dipping has been developed that enables the dipping process to take place during fruit grading and lowers the dipping time to 30 seconds without loss of efficacy. F

¹ Please see ec.europa.eu/eurostat/ramon/nomenclatures/ for details on NUTS regions, level 3

AU – scanning report

The growers participating in the project as well as a growing number of growers in general use ferromone disruption technique. This involves hanging plastic straps containing ferromones specific to codling moth and several late season tortrix moths in the orchard at a number of 800/ha. Ferromones diffuse from the straps and disrupts the ability of males to find the female moths. A total of 1-3 sprays against the moths can be avoided with this method and as most of these sprays are late season sprays (july/august) the risk of residues is high and can thus be avoided.