

Scanning report Martin Jensen, AU]

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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: WP5 Secure sustainable fruit production

Date: [25-05-2016]
[Y1 report due May 2016 for the period 03-16 to 05-16]

Source materials and methodology

Methods and selected sources

Initial consultation with colleagues at Aarhus University, Dept. Food Science to identify staff involved in research on relevant topics. Then collection of publications and disseminations from the last approximately two years to provide a start for the state of art. The personal database over publications/disseminations (PURE database) for each scientist was used as basis. Similar was done for Copenhagen University (KU PLEN) for the few scientists involved in fruit and berry research. Very little activities on the applied topics are occurring on other Danish universities. Information was also gathered from the Danish consultancy organization HortiAdvice that is responsible for almost all applied publication/dissemination of knowledge in fruit and berry area. HortiAdvice Scandinavia A/S annually publishes a best practice handbook for fruit and berry production. Best practice here is based to a large degree on information in this handbook and with added knowledge from scientific and popular papers in grower magazines.

Anon. (2016) Håndbog for frugt og bæravlere 2016. HortiAdvice Scandinavia, Hvidkærvej 29, 5250 Odense, DK.

Relevant recent projects at Aarhus University:

Theme: Thinning

Organic thinning. Apple. Project period: 1-1-2012- 31-12-2014

Best practice findings

Theme: Thinning

Apple and pear: Chemical thinning during apple flowering may involve sprays with Pomoxon, 0.75 – 2.3 liter Pomoxon/ha depending on cultivar) in 400-600 l/ha water in conventional productions, more efficient if short intensive flowering period, high (night) temperature during and after spraying and high RH air humidity, dose and timing depend on growth and yield potential in each orchard and situation. Use from begin of petal fall and 14 days longer. Cerone (ethephon) may be used at higher

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

temperatures 18-22°C at 0.15-0.25 l/ha (max 0.75 l/ha per year). At temperatures above 25°C risk of full elimination of flowers. Use up to 20 mm fruit size. Using leaf fertilizer ammonium-thio-sulphate (ATS 98-100 % active compound, dose 12-15 kg/ha, 250 l water/ha) during flowering (only open flowers) may have a thinning side effect, however risk of leaf scorching in pear, ensure rapid leaf drying conditions. Organic thinning using NaCl has been attempted on apple.

Mechanical thinning by hand held equipment or tractor driven machines with flower stripper is fairly new in Denmark but is getting more used sometimes in combination with chemical methods. Tractor speed varies from 6 to 14 km/ha and rotation of stripper varies from weak thinning at 200-280 rpm and strong thinning at 240 - 320 rounds per minute, the higher speed the faster rpm, optimum depends on need and system in each situation. Different cultivars may have different requirement from weak to strong thinning. Strip in balloon stage or begin of flowering. Avoid treatment in wet weather due to risk of Nectria, maybe spray preventative after thinning. In pear it is important to prune the trees to avoid hanging lower branches where flower buds are difficult to strip of. Sometimes complete spores will be removed in pear but seemingly this does not reduce yield or quality. Mechanical stripping of flowers is estimated to be able to reduce use of thinning chemicals by 80-100%.

Root pruning in pear to reduce vegetative growth is efficient and typically done in March cutting 30 cm deep vertically and 30 cm from the trunk one or two sided. Root pruning has also been attempted in sour cherry. Uptake of nutrients and fruit quality and size of pear may be affected and need attention.