



Euroopa Maaelu Arengu
Põllumajandusfond:
Euroopa investeringud
maapiirkondadesse

Organic production of fruit and berries

By organic fruit- and berry
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Tallinn the 24th of October 2018

My present 3 places of work

www.pometet.dk



www.laerkehoejfrugt.dk



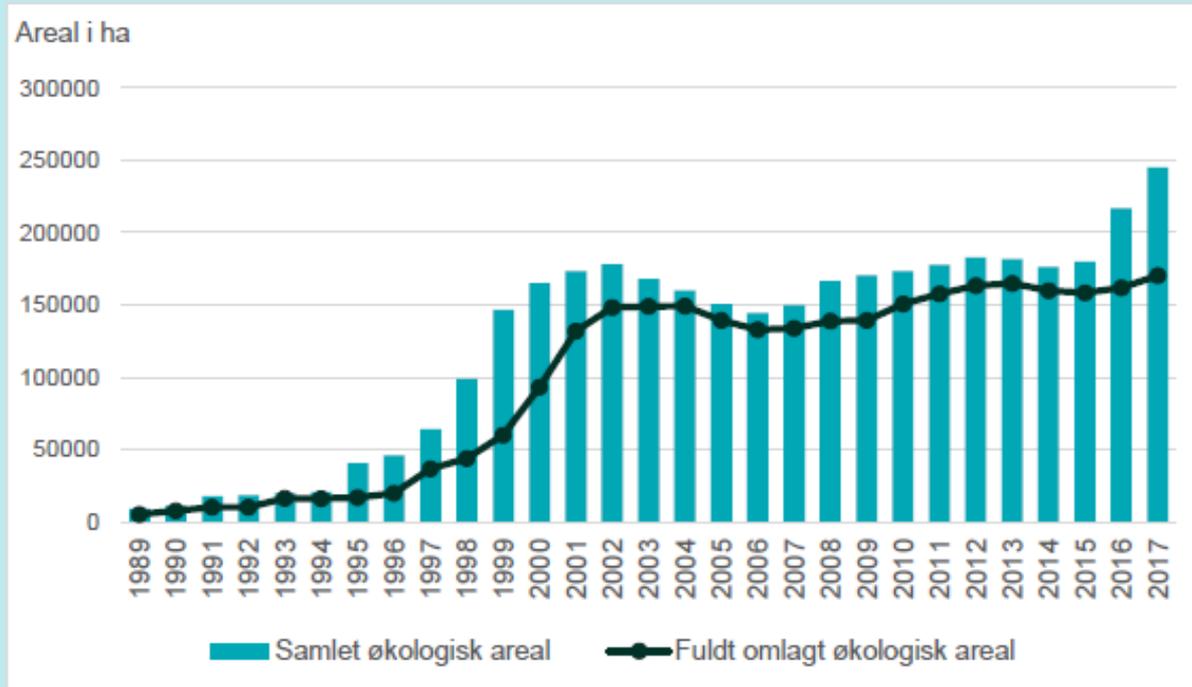
www.ecoadvice.dk

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The organic area in Denmark is rising again

FIGUR 1. Udvikling i økologiske bedrífers indberettede produktionsareal med angivelse af fuldt omlagt økologisk areal for perioden 1989-2017.



Source: Statistik over økologiske bedrífte 2017. www.lbst.dk

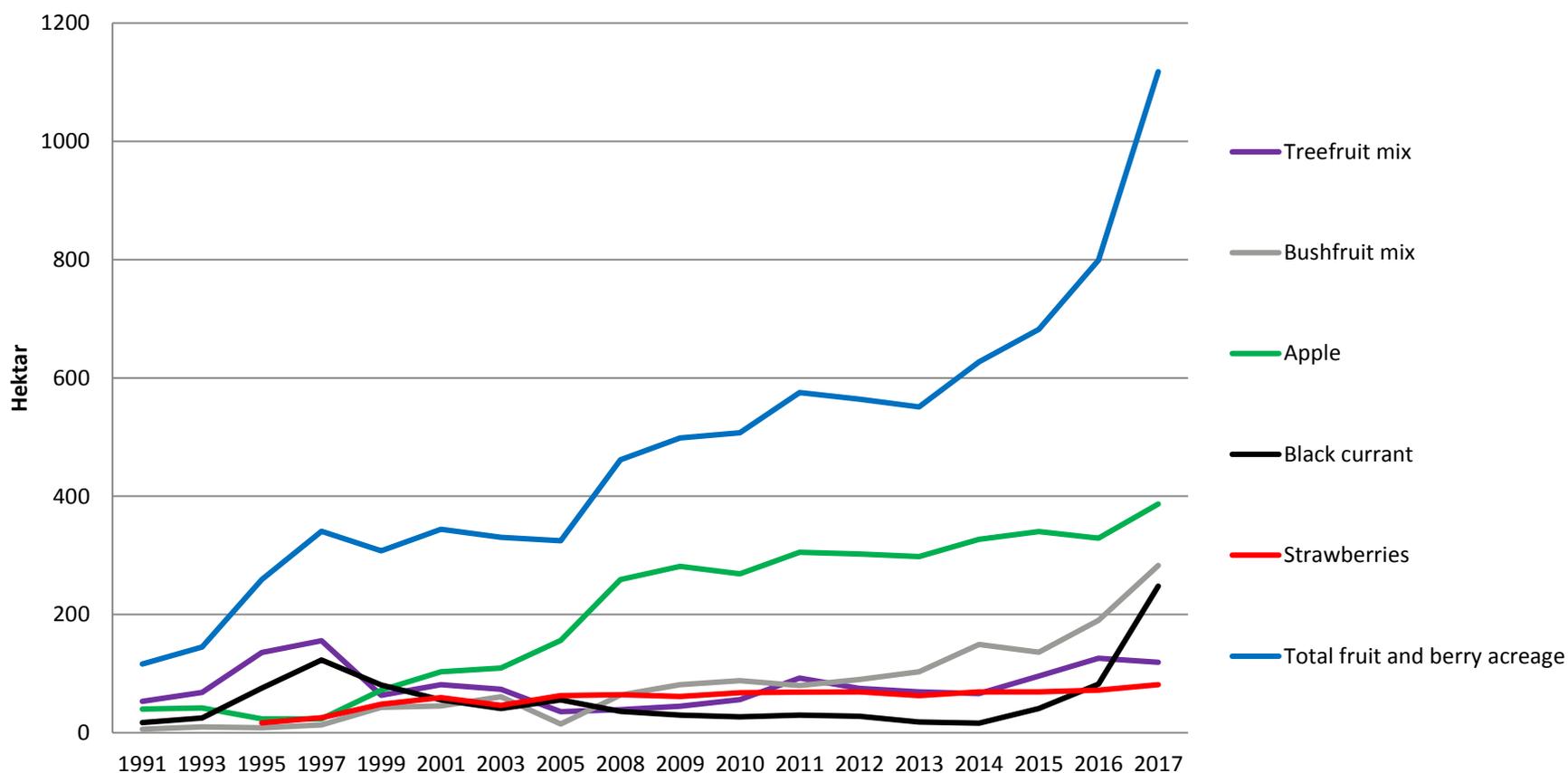
3.469 farms (8,8 %) are organic in DK in 2017 (7,9% in 2016) (3/9-18: 3.577 org. farms)

App. 245.159 ha (9,2%) were cultivated organically in 2017. (8,1 % in 2016)

Former government goal: to double the organic acreage in 2020 in rel. to 2007.

The organic fruit and berry-acreage increased with 29% in 2017

Organic grown area with fruit , berries and rhubarb in Denmark 1991-2017 (ha)



| Organic area in Denmark 2017 | Certified org. area. or 3. year conversion Ha | Under conversion Ha. | Total organic Ha | Total area in Denmark Ha | % of total DK fruit-area |
|-------------------------------------|--|-----------------------------|-------------------------|---------------------------------|---------------------------------|
| Apple | 321 | 66 | 387 | 1444 | 26,8 |
| Black Currant | 57 | 191 | 248 | 578 | 42,9 |
| Strawberry | 77 | 4 | 81 | 1191 | 6,8 |
| Rhubarb | 36 | 4 | 40 | 69 | 58,0 |
| Grapes (for wine) | 20 | 24 | 44 | 88 | 50,0 |
| Blueberry | 16 | 5 | 21 | 74 | 28,4 |
| Sour cherry | 2 | 26 | 28 | 659 | 4,2 |
| Red Currant | 14 | 38 | 52 | 242 | 21,5 |
| Hazelnuts | 17 | 8 | 25 | 36 | 69,4 |
| Pear | 13 | 10 | 23 | 303 | 7,6 |
| Other tree-fruit | 10 | 9 | 19 | 37 | 51,4 |
| Mixed fruit | 12 | 13 | 25 | 48 | 52,1 |
| Black chokeberry | 19 | 0 | 19 | 20 | 95,0 |
| Other bush-fruit | 12 | 7 | 19 | 44 | 43,2 |
| Sweet cherry | 8 | 7 | 15 | 182 | 8,2 |
| Elderberry | 10 | 2 | 12 | 14 | 85,7 |
| Rosehips | 6 | 3 | 9 | 138 | 6,5 |
| Raspberry | 7 | 2 | 9 | 30 | 30,0 |
| Plum | 7 | 0 | 7 | 69 | 10,1 |
| Gooseberry | 5 | 7 | 12 | 41 | 29,3 |
| Blackberry | 2 | 1 | 3 | 3 | 100,0 |
| Quince | 2 | | 2 | 3 | 66,7 |
| Sea buckthorn | 15 | 3 | 18 | 18 | 100,0 |
| Total | 688 | 430 | 1118 | 5331 | 20,97 |

European organic apple-production in 2010

| Country | Ha Apples | Ha Organic Apples | % Organic Acreage | Yield: Tons pr. ha |
|-------------|-----------|-------------------|-------------------|--------------------|
| Poland | 188.200 | 4.790 | 2,5 | ? |
| Italy | 57.900 | 3.364 | 5,8 | ? |
| South-Tyrol | 18.512 | 1.247 | 6,7 | 40 |
| France | 40.000 | 1.470 | 3,7 | 14 |
| Germany | 31.800 | 2.772 | 8,7 | 18 |
| Netherlands | 8.700 | 270 | 3,1 | 19 |
| Belgium | 7.700 | 145 | 1,9 | ? |
| Austria | 6.100 | 767 | 12,6 | 16 |
| Switzerland | 3.400 | 270 | 7,9 | 15 |
| Denmark | 1.684 | 268 | 15,9 | 6 |

Source: Markus Keldere, Laimburg, IOBC-meeting 2011

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Frode Lehmann,
Broagerland



Anders Lindgaard,
Kysøko, Kyse



Jørgen Svendsen, Tuse
Næs Gårdmosteri



Ole Tyrsted,
Nordenhuse



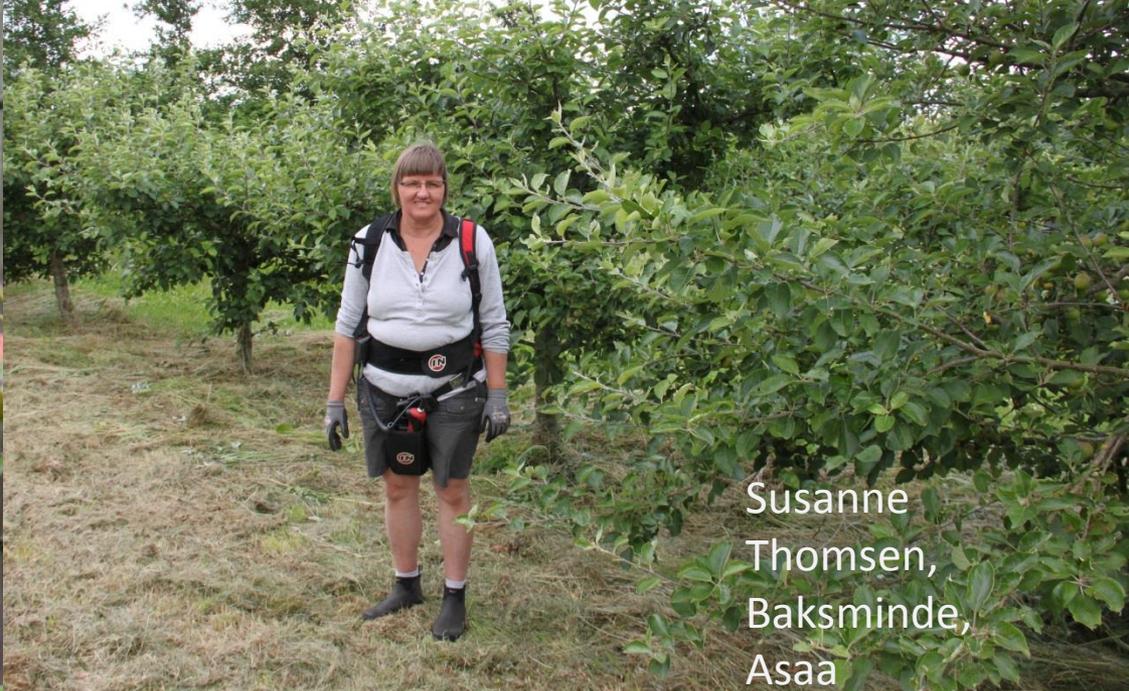
Jens H. Petersen,
Æbletoften, Tirstrup



Thorkel Bejer, Fejø



Kirsten Rohde
Jensen,
Rytzebæk,
Møn
Foto: Kultivator



Susanne
Thomsen,
Baksminde,
Asaa



Mette
Meldgaard,
Strynø

Organic Fertilizers = always organic Nitrogen-fertilizers.

Farmyard-manure (fresh,
composted, dry or liquid)

Green manure

Household-waste*

Peat, clay, mushroom-waste

Vegetable-matter

Products or byproducts of
animal origin

Seaweed, sawdust, bark, wood.

Rock phosphate

Raw potassium salt

Stonemeal

Potassium sulphate*

Magnesium carbonate*

Magnesium sulphate*

Calcium carbonate

Calcium chloride*

Trace elements*

Sodium chloride*

According to the EU council regulation EU 834/2007.

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*) under certain conditions [Guidelines on organic production](#)

Fruit trees do not require a lot of nitrogen, but the relation between nutrients is important.

A basic fertilisation of app. 40-50 kg total N/ha (only in the rows) in early spring.

Take leaf analysis in August to check the status of the nutrients in the leaves.

Adjust the fertilisation the following year according to the leaf analysis.

Spray with micronutrients if needed.

Spray with calcium-chloride in July-August in cultivars, sensitive to calcium-deficiency (big fruits).

Trial testing the effect of cover crop in the alleyway on fruit quality

The effect of cover crops on quality and yield of apples was investigated.

The following cover crops were established in the alleyways:

- 1) A permanent grass mixture of *Festuca rubra* and *Poa pratensis*.
- 2) Clover grass mixture of *Trifolium repens* and *Lolium perenne*.
- 3) Annual cover crop of *Lolium multiflorum*



Clovergrass



Annual cover crop of *Lolium multiflorum*

A permanent, slow growing grass mixture

The same cultivar "Retina" grown at different nitrogen levels

"Sustainable production systems for organic apple production". By Hanne Lindhard Pedersen.



Compost from shrubs, branches, grass and leaves makes a fine soil improvement. And it is a good source of potassium too.



Replanting-problems

The growth after replanting is 30 % lower than the growth on planting on fresh soil. Mainly because of fungus diseases like *Cylindrocarpon*, *Pythium* and *Rhizoctonia*.

Plants on "apple-tired" soil to the left.
Sterilised "tired soil" to the right



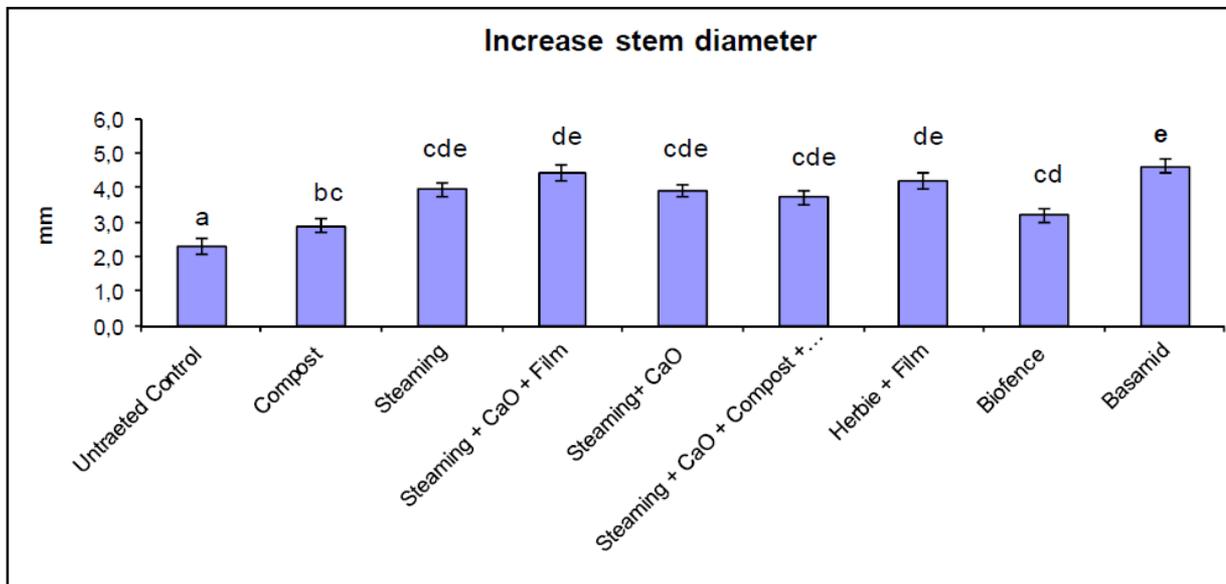
Compost or steaming of the soil enhances the growth after replanting

A- results obtained.

In 2014 at LRC the following strategies and products were applied to parcels in an open field trial: Compost, Steaming, Steaming + Calcium Oxide (CaO) + Film (soil covered for 2 weeks), Steaming + CaO, Steaming + CaO + Compost + Film, Herbie 82® (vegetal origin) + Film, Biofence® (vegetal origin), Basamid® and one untreated control.

The stem diameter and the shoot length significantly higher than other treatments were obtained with the Basamid treatment, the chemical treatment inserted in the trial (Fig. 1 Partner 2 WP4 Task 2)

Fig. 1 Partner 2 WP4 Task 2



Source:
Bio-incrop
Innovative
Cropping
Techniques to
increase soil health
in organic fruit tree
crops.

Fertigation with nettle-water, used in practice by an organic apple-grower



How to control weed mechanically

Many different tractor tools are suited for mechanical weeding in rows of fruit- trees and berry-bushes

“Tournesol” from the French company Pellenc.

“Ladurner Krümler” from Italian Ladurner company

“Humus planet” from the german company Humus

“Braun Landmaschinen” <http://braun-maschinenbau.info/>

“Wonderweeder” <https://www.wonderweeder.com/>

And several others brands, look for machinery for vineyards!

Hoeing is done by hand in young trees, removing weeds close to the tree trunks to avoid mice and voles.

Perennial weeds are prevented by cleaning the soil during the season before planting.

Remember to use different tools, different depths, different speed, different drive-direction.

Then you will control different weeds as well.

Orchard with a (Swedish) twist



Double Ladurner Krümler (in Kivik)



Ladurner krümmer is very effective and the most suitable tool for large orchards

Price app. 120.000 Dkr.





Ladurner Krümmer can manage even tall weeds.

**A High-pressure washer can also wipe out weeds.
Swedish idea, developed for stony soils.
3 mm water/treatment.**



Mechanical weeding of fruit-trees with Humus-planet





A Clemens "knife"-weeder with an extra cultivator on top

A simple, effective home-made tool cleaning only the side of the row.



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Kress Fingerweeder in this large model can weed in berry bushes.

adurner krümmer works fine in berry bushes too





Humus planet cultivator in black currants



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Flame-weeder from Envo-Dan, a prototype

Wonderweeder, an american tool



Advantage: high speed: 8-9 km/hour

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Mulching with straw or plastic is not recommendable in apple trees.

It attracts too many mice and voles.

It can be used in black currants, strawberries and raspberries though.



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Black currants cuttings can grow directly in Mypex



Black currants in "Mypex" (black plastic mulch). Apr. 1,5 year old.





Raspberries and black berries in containers on mypex. They grow well in tunnels.



On stronger rootstock, the apple trees can stand growing in grass. But it has to be cut grass. Cutting every second row at a time will leave food for the beneficial insects.

Several Danish fruit growers are also egg-producers. The effect of the hens on weed and pests decline with the distance from the henhouse.





It is important to divide the hen run into smaller sections. That will reduce problems with nutrient leaching and compacting of the soil surface. Sections makes it also possible to move the hens during the time of harvest.

Straw reduces the risk of nutrient leaching.





Geese can reach up to app. 1,5 m.
They reduce weeds but not insects.
Suitable for tall trees only.



Pigs are fine for weeding, but only in big trees like these sweet cherries

