



NIBIO
NORSK INSTITUTT FOR
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RASPBERRY: SOILLESS CULTIVATION, CROP DENSITY AND FRUIT QUALITY

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EXTENDED MARKETING SEASON FOR RASPBERRIES – WAYS TO STRETCH THE SEASON

- The 'long-cane' production method with biennial-fruiting cultivars
- With annual-fruiting cultivars
- In combination



The long-cane method – an overview

After harvest, plants back to cooler, or establishment in field for normal production of berries



Post-storage; forcing of plants in pots or in soil, for an early or late production of raspberry



Raising of long-canes in soil or in pots in greenhouse or out-door



Cooling of long-canes from December



FORCING OF PLANTS IN OPEN POLYETHYLENE TUNNELS

- Raising in 3.5 l pots
- Cooling (-2°C) from early Dec.
- Potting in 7.5 l pots
- In tunnel from 1th June
- Tipped at 160 cm
- 4 pots (plants) per meter
- 1.5 plant per m²
- Start of picking after 70-75 d
- Fertigation (2 drips per pot)



01.07.07

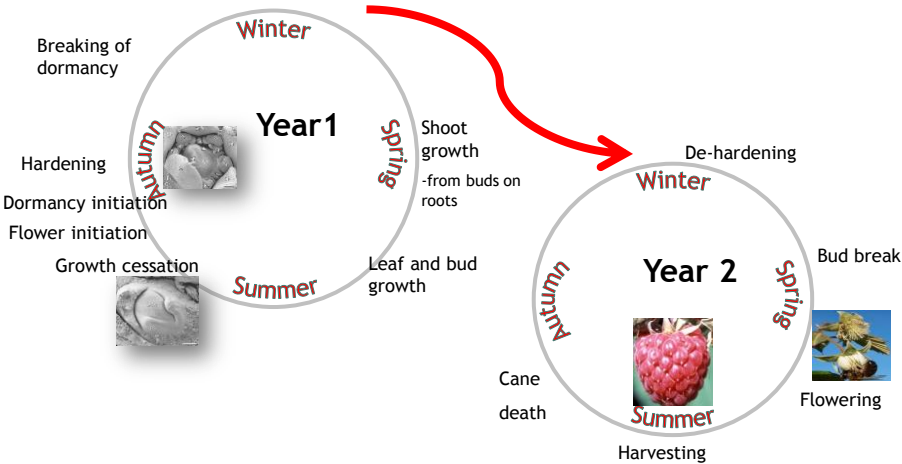
WHAT IS THE YIELD POTENTIAL OF A RASPBERRY CANE?

Cane height (cm):	160
# Buds/cane:	27
Internode length (cm):	5.9
Fruiting buds (%):	76
Non-breaking buds (%):	24
Lateral length (cm):	80
Yield (g/cane):	3853
Berry size (g/fruit):	6.7
Saleable fruits/cane:	574
Yield (kg/m row):	15.4

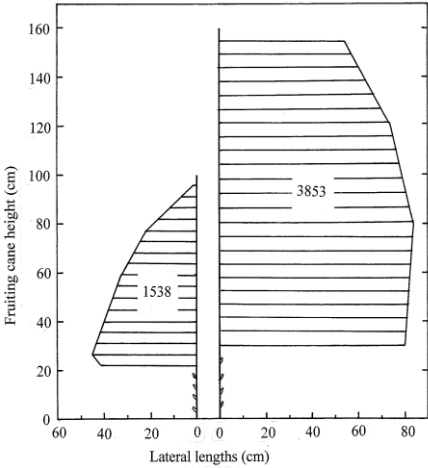
One cane per pot
(4 pots/m)



ANNUAL GROWTH CYCLE OF BIENNIAL-FRUITING RASPBERRY



SHOOT LENGTH IS IMPORTANT FOR A GOOD YIELD!



3.5 M LONG CANES



PRODUCTION OF LONG CANES AT DIFFERENT PLANT DENSITIES



Row spacing:	160 cm	100 cm	55 cm
Yield (g/plant):	3141	3170	2947

EFFECT OF SHOOT DENSITY ON YIELD AND FRUIT QUALITY

Shoot density per m row:

- 4 + 4 primocanes
- 8 + 8 primocanes
- 12 + 12 primocanes
- 16 + 16 primocanes

5 meter plots
3 reps.
Thinning of canes throughout the season

PLANTS IN SOIL IN OPEN TUNNE



CANE ARCHITECTURE, BUDS AND EARLINESS

4 + 4 canes



8 + 8 canes



12 + 12 canes







16 + 16 canes



Buds/cane:	23	21	19	20
Internode length:	6.8 cm	7.5 cm	8.1 cm	8.1 cm
Fruiting buds:	62 %	54 %	57 %	55 %
Non-breaking buds:	37 %	45 %	43 %	44 %
Lateral length (cm):	92	97	96	93
Days to harvest:	119	120	121	122
Grey mould (%):	5	16	29	27

CANE DENSITY:, YIELD AND BERRY SIZE

4 + 4 canes	8 + 8 canes	12 + 12 canes	16 + 16 canes
			
Yield (g/cane): 2263	1228	883	730
Yield (kg/m row): 8.9	9.4	9.2	10.3
Berry size (g): 7.2	7.1	6.8	6.6
No. of berries/cane: 286	159	120	99

CONCLUSIONS - CANE DENSITY

Increased cane density:

- + yield (ca. 10% kg/m row)
- dry matter, suger, acid, Vit C. i bæra
- increased disease infection on fruit and canes
- +/- time to harvesting
- Optimalt med ca. 8 skudd per meter rad når radavstand på 2 meter

WHAT IS THE YIELD POTENTIAL OF A RASPBERRY CANE?

Cane height (cm):	160	(0)
Bud/cane:	21	(-6)
Internode length (cm):	7.5	(+1.6)
Fruiting nodes (%):	54	(-22)
Non-breaking nodes (%):	46	(+22)
Lateral length (cm):	97	(+17)
Yield (g/cane):	1228	(-2625)
Berry size (g/berry):	7.1	(+0.4)
Markedable fruits/cane:	159	(-415)
Yield (kg/m row):	9.4	(-6)

Canes in soil
(8 canes/m row)



TWO CANES PER POT



