

NYTT OM BRUK AV TREFIBER SOM VEKSTMEDIUM FOR BÆRDYR KING

Tomasz Woznicki (NIBIO)



2018: 'screening' av vekstmedier

Jordbærplanter i trefiber (Hunton) – NORMAL VEKST!



VAREDEKLARASJON – FIBER FRA HUNTON



Varetype: Cellulosefiber (A.5 i hht. NS 2890)

Bruksområde: Dyrkingsmedium til gartnerivirksomhet

Sammensetning: Fiber av granved, hygienisert ved varmebehandling

Kvalitetsklasse: 0

Moldklasse: Organisk dyrkingsmedium (>95 % organisk materiale)

Findelingsgrad: Findelte langstrakte fibre (<0,5 mm diameter)

Leveringstype: Bulk

Parameter	Metode	Enhet	Måleverdi*
pH	NS-EN 13037		4,9
Densitet	NS-EN 13040	kg/m ³	20
Ledningsevne	NS-EN 13038	mS/m	2,5
Fosfor	CAT	mg/l	1,5
Kalium	CAT	mg/l	7,5
Kalsium	CAT	mg/l	-
Magnesium	CAT	mg/l	5,0
Natrium	CAT	mg/l	4,5
Svovel	CAT	mg/l	14±11
Jern	CAT	mg/l	0,4
Kobber	CAT	mg/l	0,2
Mangan	CAT	mg/l	2,0
Sink	CAT	mg/l	0,4
Bor	CAT	mg/l	0,2
Molybden	CAT	mg/l	<0,05
Aluminium	CAT	mg/l	0,2
Nitrat-N	CAT	mg/l	0,3
Ammonium-N	CAT	mg/l	4,5
Kjeldahl-N	Kjeldahl	mg/l	30
Tørrstoff	NS-EN 13040	g/l	95
Organisk innhold	NS 2890	g/100 g	99,7
C/N			>100
Arsen-total	HNO ₃	mg/kg TS	<1
Sink-total	HNO ₃	mg/kg TS	10
Bly-total	HNO ₃	mg/kg TS	<1
Nikkel-total	HNO ₃	mg/kg TS	<0,5
Kobber-total	HNO ₃	mg/kg TS	0,75
Kadmium-total	HNO ₃	mg/kg TS	0,044
Krom-total	HNO ₃	mg/kg TS	<0,5
Kvikksølv-total	HNO ₃	mg/kg TS	<0,01

*Oppgitte verdier er gjennomsnitt av prøveresultater

2019: Ny tunnel og «Teknobua»



2019: FORSØK MED VEKSTMEDIER TIL JORDBÆR FORTSETTER



1. Vanningsforsøk til ulike substrater med 'Malling Centenary'



2. Sammenligning av ulike trefiber-blandinger til 'Sonata'



3. Gjødslingsstrategi med ulike substrater (torv, kokos, trefiber) og **2 sorter** ('Sonata' og 'Malling Centenary')



'Malling Centenary'-Tray



'Sonata'- WB H

Torv, kokos, trefiber: ingen synlig forskjell?



Foto: 22. august

Forsøk 1: Vanningsforsøk til ulike substrater med 'Malling Centenary'

Table 1. Implemented watering strategy

Time of the day	Watering criterion
9.00-10.00	When temp. > 20 °C and solar radiation > 500W/m ²
10.00-13.00	Fixed watering at 10.00 and 12.00
13.00-17.00	When daily radiation sum > 500J/m ² (min. 1.5 h between watering)
17.00-21.00	When temp. > 23 °C, (min. 1.5 h between watering)

Torv – 3 min

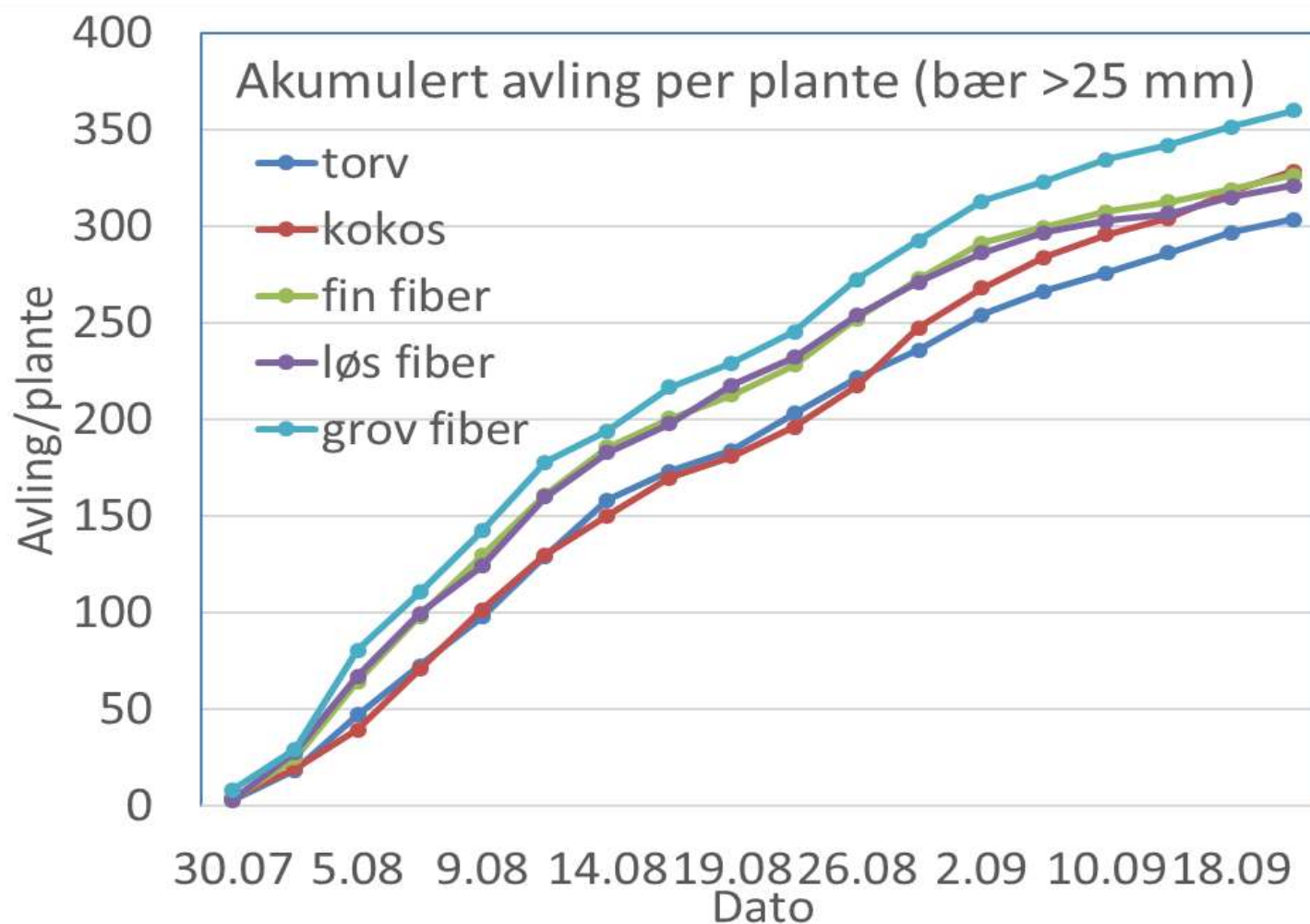
Kokos – 5 min

Fin fiber – 3 min

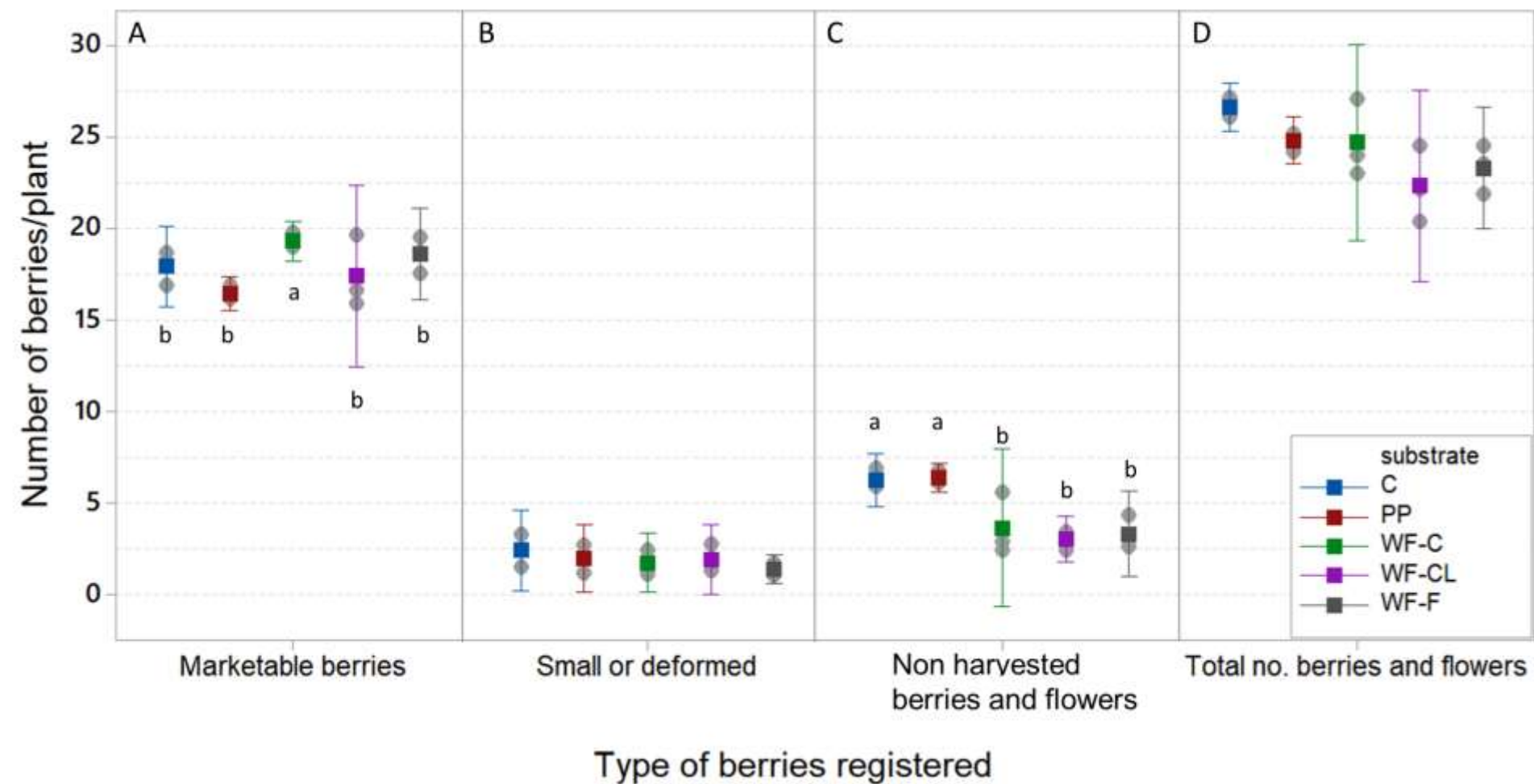
Grov fiber – 4 min

Løs fiber – 7 min

Forsøk 1: Vanningsforsøk til ulike substrater med 'Malling Centenary'



Forsøk 1: Samme potensial i plantene, men tidligere i trefiber



FORSØK 2: SAMMENLIGNING AV ULIKE TREFIBER-BLANDINGER TIL 'SONATA'



1. **Torv + Perlitt (20%)**



2. **Kokos**

3. **Grov trefiber:** 400 g fiber/1 L vann

4. **Våt trefiber:** 1.25 kg fiber + 0.5 L vann

5. **Fin trefiber:** 500 g fiber/1L vann

6. **Løs trefiber:** 400 g fiber/1 L vann



7. **Furu-fiber** fra Klasmann: 2.5 kg/1L vann

8. **Torv/trefiber-miks** fra NORGRO: 1.25 kg/ 1L vann

9. **Grov trefiber + humus-syre:** 400 g fiber/1 L vann + 50 ml HS

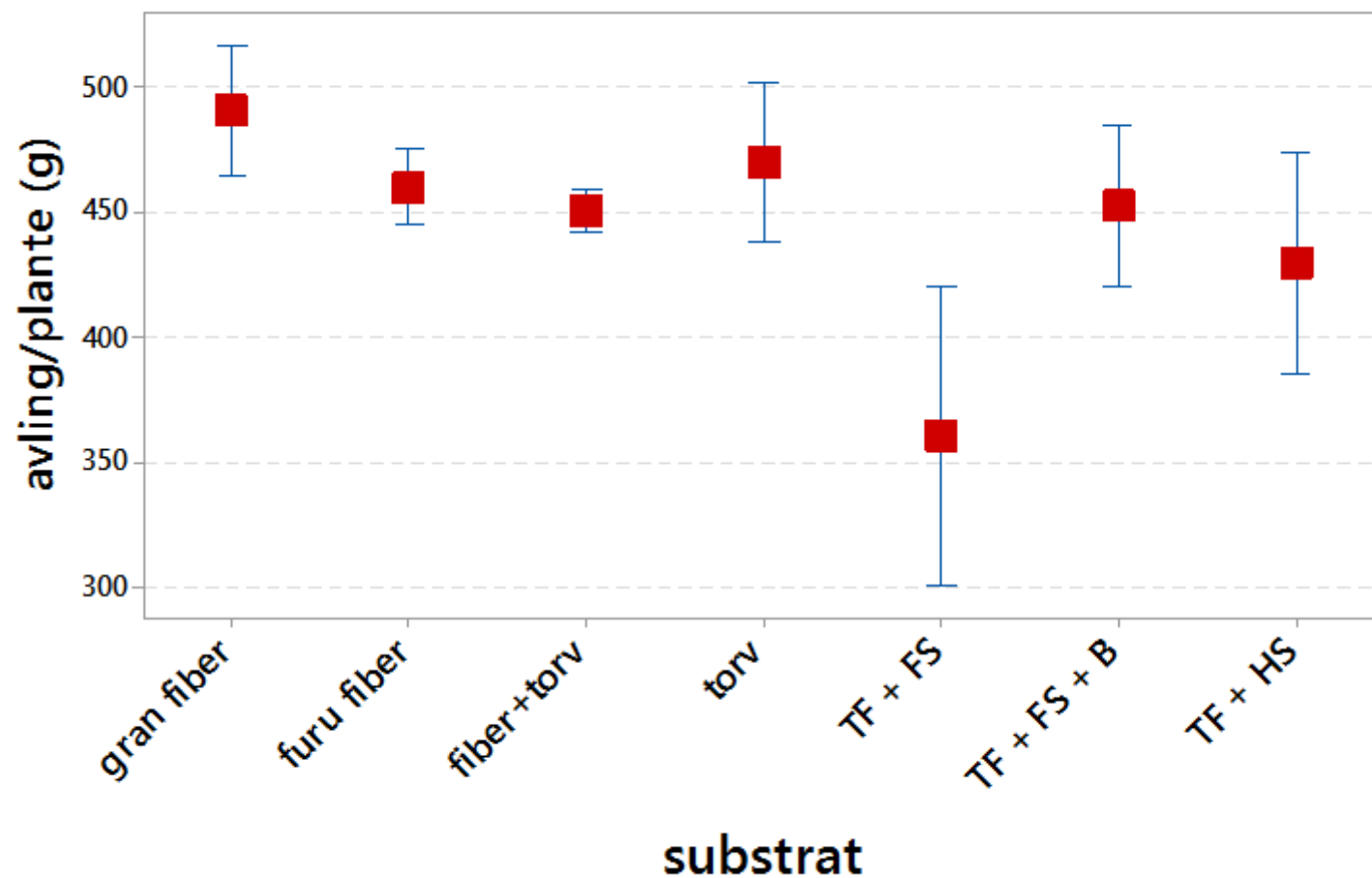
10. **Grov trefiber + fulviksyre:** 400 g fiber/1 L vann + 50 ml FS

11. **Grov trefiber + fulviksyre m. bakterier:** *Bacillus subtilis*,
B. methylotrophicus, *B. licheniformis*

400 g fiber/1L vann + 50 ml FS+B



FORSØK 2: SAMMENLIGNING AV ULIKE TREFIBER-BLANDINGER TIL 'SONATA'



FORSØK 3: GJØDSLINGSSTRATEGI MED SUBSTRATER (TORV, KOKOS, TREFIBER) OG 2 SORTER

Tank 1: N+ : N+

Calcinit: 66g/100l ferdig blandet

Kristalon Scarlet: 61g/100l ferdig blandet

Tank 2: N+ : N+K+

Calcinit: 66g/100l ferdig blandet

Kristalon Scarlet: 61g/100l ferdig blandet

Kalium sulfat: **20**g/100l ferdig blandet

Tank 3: N+ : N-K+

Calcinit: 45g/100l ferdig blandet

Kristalon Scarlet: 61g/100l ferdig blandet

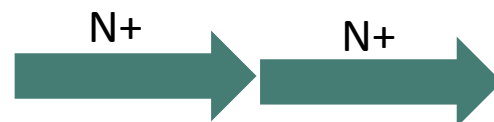
Kalium sulfat: 20g/100l ferdig blandet

Tank 4: N+ : N-

Calcinit: 45g/100l ferdig blandet

Kristalon Scarlet: 61g/100l ferdig blandet

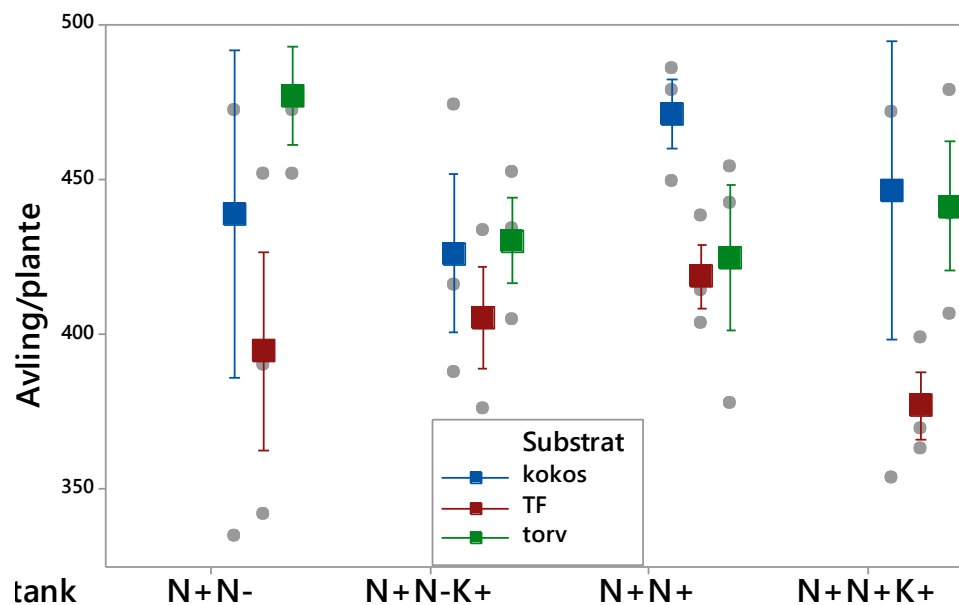
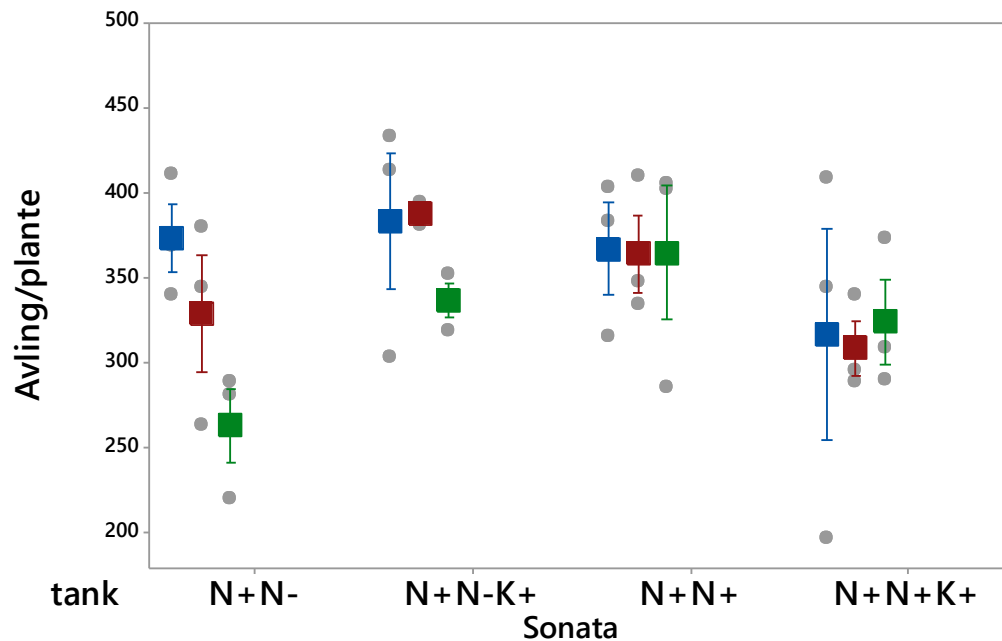
Start vekst Blomstring



	N+ (basic)		N+K+		N-K+		N-	
	mg/l	mmol/l	mg/l	mmol/l	mg/l	mmol/l	mg/l	mmol/l
N	149.5	10.6	149.5	10.6	115.9	8.3	115.9	8.3
P	32.0	1.0	32.0	1.0	32.0	1.0	32.0	1.0
K	184.0	4.7	267.0	6.8	267.0	6.8	184.0	4.7
Mg	16.6	0.7	16.6	0.7	16.6	0.7	16.6	0.7
S	24.6	0.8	56.6	1.8	56.6	1.8	24.6	0.8
Ca	126.7	3.2	126.7	3.2	85.5	2.2	85.5	2.2

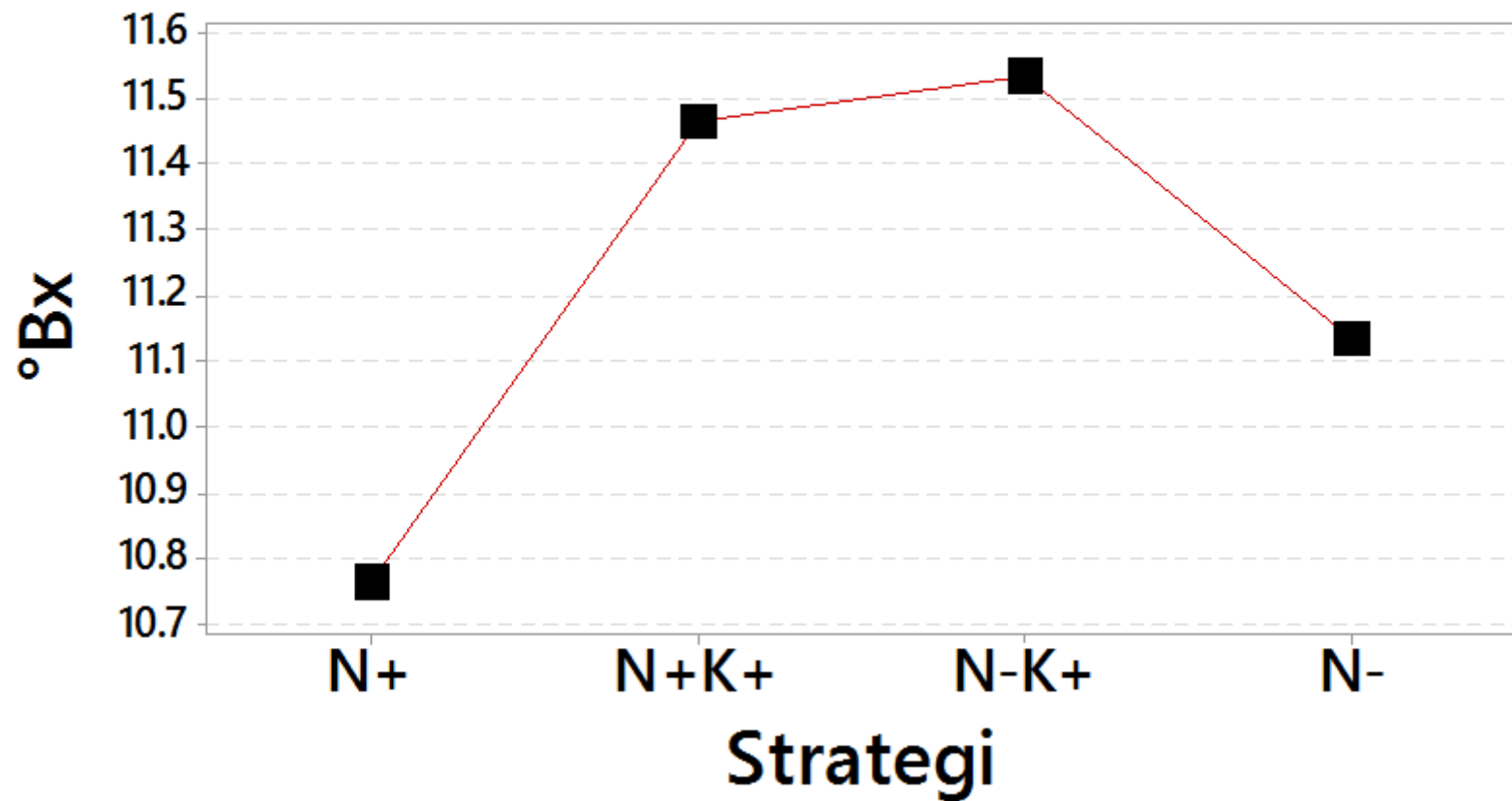
Forsøk 3:
Gjødslingsstrategi
med substrater
(torv, kokos,
trefiber) og 2 sorter

Malling Centenary



Brix (°Bx)

Sonata, trefiber



FOR PRIVATMARKEDET:

- Materialer fra Nordic Garden
- Tester trefiber som erstatning for torv-andelen
- Tester 30 blandinger til tomat, gulrot, petunia



NIBIO:
Trond Knapp
Haraldsen



III INTERNATIONAL SYMPOSIUM ON GROWING MEDIA, COMPOSTING AND SUBSTRATE ANALYSIS

MILAN, JUNE 24-28, 2019



Monday, 24 June

Session 1: Novel components and innovative processing of growing media - Chairman: Brian Jackson

- 16:00-16:15 Agricultural wastes-based substrates affect growth and flowering of geranium (*Pelargonium bicolor*)
Ifthikhar Ahmad
- 16:15-16:30 Exploration of alternative growing media potential in strawberry production under Nordic conditions
Tomasz Woznicki
- 16:30-16:45 ReGrow4C: Reuse of spent growing media for circular cultivation of ornamentals
Bart Vandecasteele
- 16:45-17:00 Universal nitrate free nutrient substrates based on chemically modified natural clinoptilolites
Yauheni Kasandrovich
- 17:00-17:15 Evaluation of wood fiber as component of substrates for container nursery crops
Daniela Beretta

Horticulture Substrates

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Greetings

Welcome to Brian E. Jackson's webpage and to the Department of Horticultural Science at North Carolina State University!

NC STATE UNIVERSITY



Fig. 5: Marigolds grown in peatite (PL) with no added sulfur show no deficiency symptoms compared to plants in 100% pine tree substrate (PTS; A). The addition of 1.5 lbs/yd³ calcium sulfate to 100% PTS (CONT) lessens the deficiency and improves growth of marigold (B) and geranium (C) equal to that of plants grown in peatite.



Klasmann-Deilmann conducted experiment in continued growing of Elsanta

"Good results with new substrate of alternative wood fiber raw material"

Klasmann-Deilmann recently completed a trial with substrates for continued growing of Elsanta at Proefcentrum Hoogstraten. The results show that GreenFibre, an alternative raw material made of wood fiber developed by Klasmann-Deilmann and produced in-house, is an excellent alternative to coconut coir and peat substrates.

GreenFibre contains no silicon and is made industrially, so that the quality is constant. The new substrate mixture for strawberries shows good root development and is an economically attractive alternative to coco coir, according to the substrate producer.



Frank Lenkens at substrate test in Proefcentrum Hoogstraten

Armed with the scientifically substantiated results of the tests in Hoogstraten, Frank Lenkens from Klasmann-Deilmann has started some practical tests at the BerryNova research department of Genson Soft Fruit Plants in Sint-Oedenrode and at Delphy. The results so far confirm the results of Hoogstraten, but the final results will be announced at the end of June and the beginning of August respectively.

Strawberry growers who are interested in the tests at Genson Soft Fruit Plants, can contact Frank Lenkens for a visit to the nursery in Sint-Oedenrode. Visits are strictly by appointment only. Frank can be reached at +31 (0) 6 -13 40 16 72.

For more information:
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Nieuwe Waterwegstraat 34
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NYTT PROSJEKT: 'SUBTECH' (2020-2023)

- Finansiering fra 'Forskningsmidlene for jordbruk og matindustri', Grofondet ('SUBTECH', 2020-2023), Hunton m.fl
- For 'proff-markedet'



Partnere:

NIBIO Apelsvoll, Særheim, Ås
NLR Viken, Grofondet,
Gartnerhallen m/dyrkere,
Hunton, NORGRO, Grønt Skifte,
Ekeberg Myhreene, ILVO Belgia

WP1 Substratutvikling
WP2 Plantevekst-monitoring
WP3 Presisjonsgjødsling
WP4 Teste i produksjon
WP5 Kommunikasjon



Takk!

