

Nutritional extras...



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Nutritional extras...

- Nutrient solution optimized for soilless and soil culture
- Extra foliar nutrition for fruit quality
- Side-effects of fertilisers, plant elicitors on fruit quality, plant disease resistance

Foliar nutrition...

Ca and P foliar nutrition can improve fruit shelf life

- <Chelal-Ca, Fructol (5/815+4), Chelal-Mg, Wuxal-Ca usually have no effect on yield, fruit size but can improve shelf life by reducing gray mould infection
- <Positive effect of foliar treatment with $MgSO_4$ on leaf colour and mildew infection but no clear effect on fruit firmness nor gloss
- <Reduction of fruit rot by foliar nutrition of Seniphos (3/23/4) on softer varieties in greenhouse culture

Rot in % na bewaring

Behandeling	in frigo uit frigo telling	29/09/04	5/10/04	12/10/04	19/10/04	26/10/04
		1/10/04	6/10/04	13/10/04	20/10/04	29/10/04
		5/10/04	11/10/04	18/10/04	25/10/04	2/11/04
Controle		34	35	21	60	42
Actisil druppelen		50	30	40	43	19
Actisil spuiten		48	32	22	53	13
Actisil + Ca(NO ₃) ₂ spuiten		53	22	12	56	36
Ca(NO ₃) ₂ spuiten		33	23	10	28	10

Hardheid bij oogst

Behandeling	29/09/2004	5/10/2004	12/10/2004	19/10/2004	26/10/2004
Controle	71,06 n.s.	56,76 a	65,60 n.s.	66,46 n.s.	64,00 n.s.
Actisil druppelen	72,00 n.s.	67,36 c	65,84 n.s.	60,92 n.s.	66,42 n.s.
Actisil spuiten	67,66 n.s.	58,56 a b	61,06 n.s.	64,78 n.s.	69,14 n.s.
Actisil + Ca(NO ₃) ₂ spuiten	71,80 n.s.	64,48 b c	64,24 n.s.	67,18 n.s.	68,84 n.s.
Ca(NO ₃) ₂ spuiten	72,62 n.s.	63,62 a b c	60,08 n.s.	66,66 n.s.	69,00 n.s.

Phosphorous acids...

Several products with active ingredient phosphorous acid : Phostrol (Nufarm Inc), Agri-Fos (Agrichem Inc), Prophyt (Helena Chem), Phosfik(Kemira)

- <USA and Germany labelled for control of leatherrot (*Phytophthora cact.*) and red steele (*Phytophthora frag.*)
- <Direct effect on pathogens and indirect effect by stimulation of natural defense system of plants
- <no pre-harvest interval
- <labelled as fertilisers and cheap substitute for Aliette

Trials at Michigan USA 2005

- Effect of 4 sprays of several phosphorous acids against leatherrot and some effects against bacterial angular leaf spot on calyx
- No significant control of gray mould (*Botrytis cin.*)
- Agri-Fos, Phostrol ad ProPhyt could be fytotoxic expressed by slight burning of leaf tips

Trial Michigan, USA 2005

Treatment	% leatherrot in first harvest	% control in first harvest	% leatherrot in second harvest	% control in second harvest
Control	21		35	
ProPhyt 3.6 pt	14	71	18	49
Aliette WDG4 lb	9	83	13	63
Physpe 14.4 fl oz	5	83	13	63
Physpe 14.4 fl oz	5	88	9	74
Phostrol 3.5 pt	13	92	11	69
Agri-Fos 4.5 pt	14	96	8	77

Trials at Meerle and Tongeren, Belgium 2003

- Effect of 3 irrigations of Phosfik at rates of 10 l/ha soil culture of Elsanta
 - < Positive effect on supression of Phytophthora cactorum in combination with Aliette
- Effect of 4 irrigations of Phosfik at rates of 3 l/ha soil culture of Elsanta
 - <Yield increase of 9 % and significant more Class I fruit

Trial Meerle 2003

Fertigation	Treatment	Kg/pl	Kg/m²	Phytophthora cactorum in %
Normal	Control	0.378 ns	1.510	26.8
Normal	Aliette 0.125 g/pl	0.431 ns	1.726	24.3
Normal + Phosfik	Control	0.460 ns	1.838	25.6
Normal + Phosfik	Aliette 0.125 g/l	0.507 ns	2.029	17.9
Normal	Paraat 0.1 g/pl	0.647 ns	2.586	5.8

Trials at Middelbaden, Germany

- Effect of dipping in 0.3% Phosfik at planting during 15 minutes and spraying in October at rates of 10 l/ha reduced *Phytophthora cactorum*
- Spraying at rates of 15 l/ha Phosfik reduced *Phytophthora cactorum* even more but not significantly

Mittelbaden, 2003

Treatment	Number of plants wilting due to <i>P. cactorum</i>			
	5 October	16 January	14 May	30 May
Control	7	10	35	38
Standard	6	7	9	10
Phosfik	3	3	4	4

Effect of phosphorous acid Phosfik against powdery mildew Trials at Meerle 2003

- Effect of 3 foliar application in a greenhouse culture of Elsanta
 - < Positive effect on suppression of *Sphaerotheca mac.*
 - < Result was more effective than Systhane (myclobutanil) but less effective than Topaz and Signum
 - < Also Kendal, a plant fertiliser (3/15) had some effect against powdery mildew
 - < Also relative good results with fertilisers KHCO_3 or bicarbonaat (4-5 kg/ha) and Actisil (Silicon)

Trial Meerle, 2003

Treatment	Active ingredient	Rate
Kendal	3.2 N, 15.5 K₂O	2 l/ha
Signum	6.7 pyraclostrobin+ 26.7 boscalid	1.8 kg/ha
Phosfik	3 N, 27 P₂O₅, 18 K₂O	2 l/ha
Thiovit	Sulphur 80 WP	5 kg/ha
Topaz	Penconazol 100 EC	0.5 l/ha
Switch	37.5 Cyprodinil+ 25 fludioxinil WG	1 kg/ha
Stimuleaf	60 % H₂O₂	1 l/ha
Systhane	Myclobutanil 240 EC	0.25 l/ha

Effect against powdery mildew

Treatment	Powdery mildew % TH3	Efficiency Abott %
Control	40.3	-
Kendal	20.3	49.5
Signum	11.8	70.6
Phosfik	16.3	59.6
Thiovit (Sulpher)	11.8	70.6
Sulpherburner	16.3	59.4
Topaz	14.8	63.3
Switch	15.9	60.5
Stimuleaf	26.3	34.9
Systhane	24.4	39.4

Rootstimulants

- Several substances based on fertilisers and natural plant hormones can improve root development. Plants defence mechanisms are stimulated, often cytokinines and gibberelins affect plant growth and resistance
- Radifarm, Radicante, Seaflakes, Seaprills etc.; (Terrasorb, Anorel
- Dipping or irrigation after planting

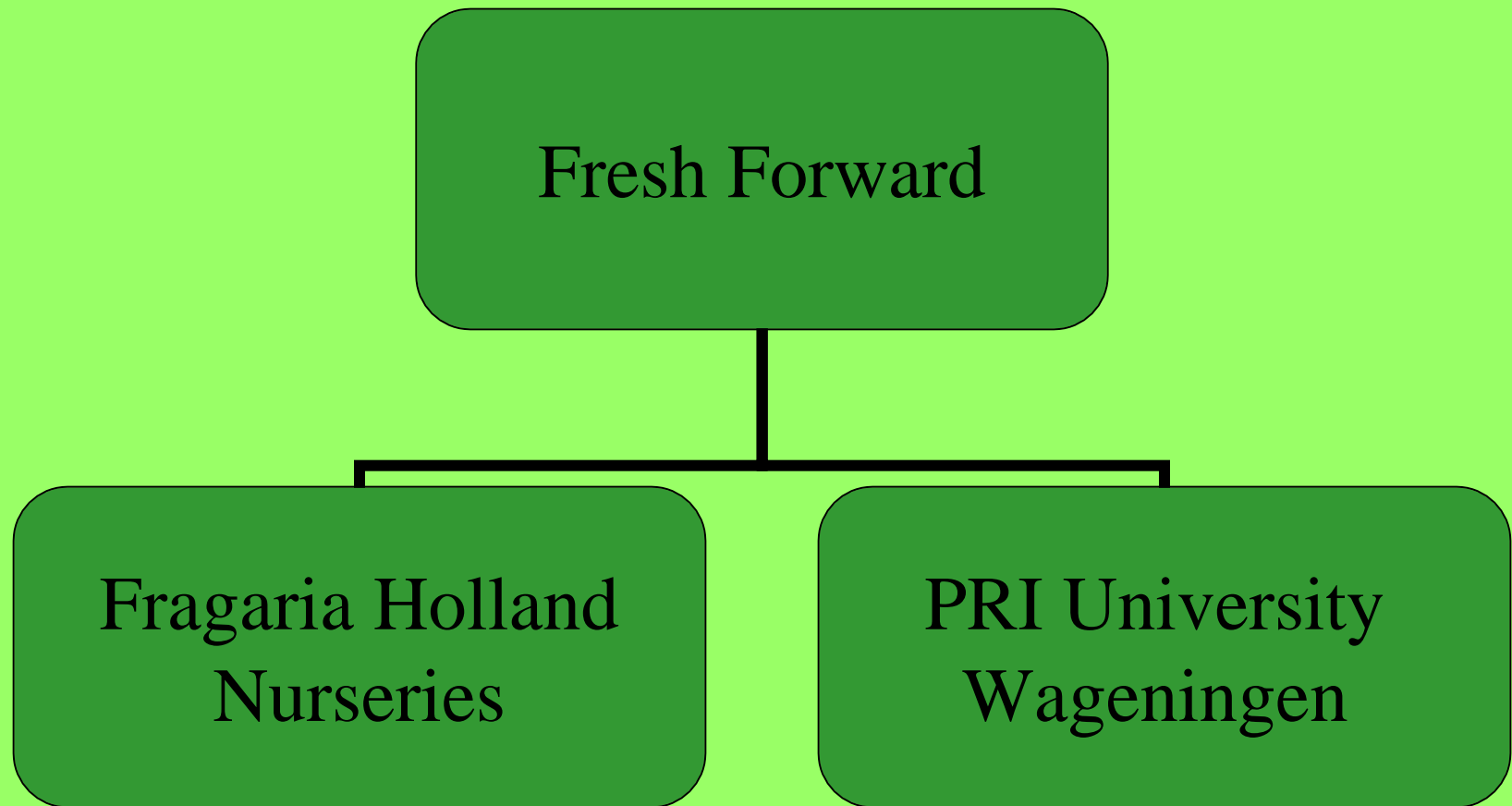
Trial 2004

Product	% N-P-K	Other ingredients	Rate of application
Radifarm	2-0-4	Fe, Zn, polysaccharides	2.5 cc/l
Seaflakes	1-6-19	Mg, S, Cu, Fe, 600 ppm cytokinines & gibberellins	500 g/m ³
Seaprill	3-2.6-10	Mg, S, Cu, Fe, 600 ppm cytokinines & gibberellines, 160 ppm auxines, 0.6 % betaines	500 g/m ³
Bioradicante	7.2	Fe, Mn, Zn, B, Mo	3.5 cc/l

Trial with plug plants 2004

Treatment	2 weeks after rooting				Rhizoom diameter december (mm)		Kg/pl		Kg/m²
	Rootlength in cm		Roots per stolon						
Bioradicante	4,2	a	28,2	b	16,1	ab	0,363	ns	3,811
Radifarm	12,8	b	21,6	a	17,4	bc	0,417	ns	4,378
Seaflakes	13,8	bc	27,8	ab	18,1	c	0,408	ns	4,284
Seaprills	15,1	c	28,8	b	17,5	c	0,404	ns	4,242
Controle	14,1	bc	26,8	ab	16,0	a	0,404	ns	4,242

New strawberry varieties



SONATA

- June bearer
- Cross of Elsanta x Polka
- Compact growth habit, shorter first inflorescence
- Higher chilling requirement than Elsanta
- Fruits are protected from sunburn in outdoor crop
- Very good quality flowers : big anthers with lots of pollen, viable pistils



SONATA

- Very good fruitset
- First fruits large and little bit wedged
- Uniform short conical fruits
- Almost no misshaped fruits !
- Orange-red colour
- Internal pink colour
- Not too dark in summer
- Colours not enough in very late autumn in greenhouse



SONATA

- Almost as firm as Elsanta.
However, slightly more sensitive skin
- Carefull with bruising,
250 and 330 gram
packaging preferred
- Shelf life comparable to
Elsanta
- In general good sweet
taste, juicy berries



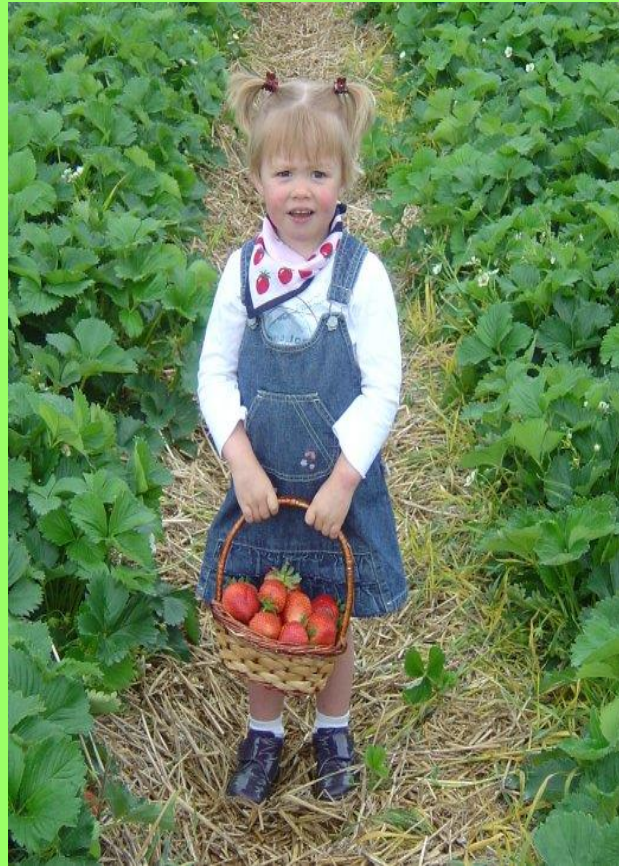
SONATA

- Production comparable to Elsanta or 5 % less but no misshaped
- Generally 2 days later than Elsanta in spring and summer, 1 week later in autumn
- Variety for spring production in greenhouse, tunnel and outdoors, summerproduction as 60 day plant



ISAURA

- June bearer
- Compact growth habit, short inflorescences partially hidden under the foliage
- Good protection against sunburn and rain
- Very late variety, flowers 2 weeks after Elsanta
- Produces 10-14 days after Elsanta
- Good quality flowers with sufficient pollen and viable pistils



ISAURA

- Very good fruitset
- Fruits are uniform conical as Elsanta
- Low incidence of misshaped fruits !
- Glossy and red colour
- Internal red colour
- Maintains brightness well during storage
- Almost as firm as Elsanta.
- Shelf life comparable to Elsanta



ISAURA

- In general good sweet taste, juicy berries
- Can be slightly more acid than Elsanta
- Yields around 600 gram/plant as fresh plant
- Good substitute for other late varieties
- Suitable for late crop outdoors and as 60 day planting

