

Nya betningsmedel mot skadeinsekter i Europa 2001

New seed treatments against insects in sugar beet in Europe
2001-1-4-483

SBU Sockernäringsens BetodlingsUtveckling AB bedriver
försöks- och odlingsutveckling med sockerbetor inom
områdena biologi, ekonomi och teknik.

SBU ägs till lika delar av Danisco Sugar och Betodlarna.

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Betning mot skadeinsekter i Europa - Syngenta

Summary

At the third counting, the largest number of plants was found in the treatment with Montur closely followed by the treatment with tefluthrine 4 g.

The lowest number of plants (70 000 plants/ha) was found in the treatment with Cruiser 600 FS 30 g.

The effect against aphids was more or less comparable for the treatments with Gaucho 60 g, Gaucho 90 g, Cruiser WS 70 60 g and Cruiser 600 FS 60 g. These treatments showed a low number of aphids/plants and a low number of affected plants in the first evaluation in the beginning of July. The number of aphids/plant and percentage of affected plants had increased slightly at the second evaluation (middle of July) but there was still a positive effect from the treatments (around 30% affected plants).

Borgeby / 2002

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Åsa Olsson
Project manager

Borgeby / 2002

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Robert Olsson
Managing Director SBU AB

Betning mot skadeinsekter i Europa - Syngenta

Introduction

The purpose of the trial was to evaluate the effect of new seed treatments on number of plants, plant condition and effect against insects.

Materials and methods

The trial included 12 insecticide treatments and one untreated control arranged in a randomized complete block design. The trial was laid out at Ädelholm, Staffanstorp.

The number of plants in each treatment were counted three times during emergence and finally after inter-row cultivation.

The plant condition was evaluated twice and included estimations of the number of healthy plants, damage score and number of plants affected by fungi. The first evaluation of plant condition took place when the cotyledones had developed and the ordinary leaves were just visible. The second evaluation of plant condition took place two weeks later, when the plants had 2 - 4 ordinary leaves. Damage score was measured on a scale from 0 - 5 where 0 denoted a healthy plant and 5 a dead plant.

The number of insects at the trial site was estimated in the untreated control in the beginning and middle of May.

The number of aphids and percentage of plants affected by aphids were evaluated twice: in the beginning and middle of July.

The evaluation of plant condition, number of insects and aphids were carried out by the Swedish University of Agricultural Sciences.

Results and discussion

Insects

The most frequently occurring insects in the beginning of May were various genera of *Onychiurus* spp., but Symphyla, millipedes and *Diplura* also occurred.

At the second evaluation in the middle of May, the number of insects/10 plants were slightly lower than in the beginning of May. In addition to Symphyla, millipedes and *Diplura*, *Atomaria linearis* and *Collembola* were also found.

Tusenfoting (Millipedes, *Blaniulus guttulatus*)

Betbagge (*Atomaria linearis*)

Fåfoting (Symphyla)

Klotcolembol (*Collembola*)

Larvborstsvans (*Diplura*)

Plant number

There were no significant differences between the treatments at any of the countings during emergence or after inter-row cultivation.

At the third counting, the largest number of plants (>83 000 plants/ha) was found in the treatment with Montur closely followed by the treatment with tefluthrine 4 g. More than 80 000 plants/ha were also found in the following treatments: Cruiser WS 70 30 g, Cruiser 600 FS + tefluthrine (10 + 4) and tefluthrine 8 g.

The lowest number of plants (70 000 plants/ha) was found in the treatment with Cruiser 600 FS 30 g.

Plant condition

With the exception of the percentage of plants infected with fungi, there were no significant differences between the treatments in plant condition.

There is a tendency for all the seed treatments to have more healthy plants than the untreated control. At the first evaluation of plant condition, the largest percentage of healthy plants was found in the treatments with Montur, Cruiser 600 FS 60 g and tefluthrine 12 g.

Aphids

The effect against aphids was more or less comparable for the treatments with Gaucho 60 g, Gaucho 90 g, Cruiser WS 70 60 g and Cruiser 600 FS 60 g. These treatments showed a low number of aphids/plants and a low number of affected plants in the first evaluation in the beginning of July. The number of aphids/plant and percentage of affected plants had increased slightly at the second evaluation (middle of July) but there was still a positive effect from the treatments (around 30% affected plants).

The combination between Cruiser 600 FS and tefluthrine (30 + 4) also showed a good effect against aphids in the beginning of July. However, in contrast to the above mentioned four treatments (Gaucho 60 g, Gaucho 90 g, Cruiser WS 70 60 g and Cruiser 600 FS 60 g) the effect did not appear to persist for long and in the middle of July the number of aphids/plant and percentage of affected plants had increased (percentage of affected plants = 44%).

The effect of tefluthrine (when applied by it self) was significantly less than for many of the other insecticide treatments and result in a high number of aphids/plant as well as a high number of affected plants in both of the evaluations (second evaluation, around 60% affected plants).

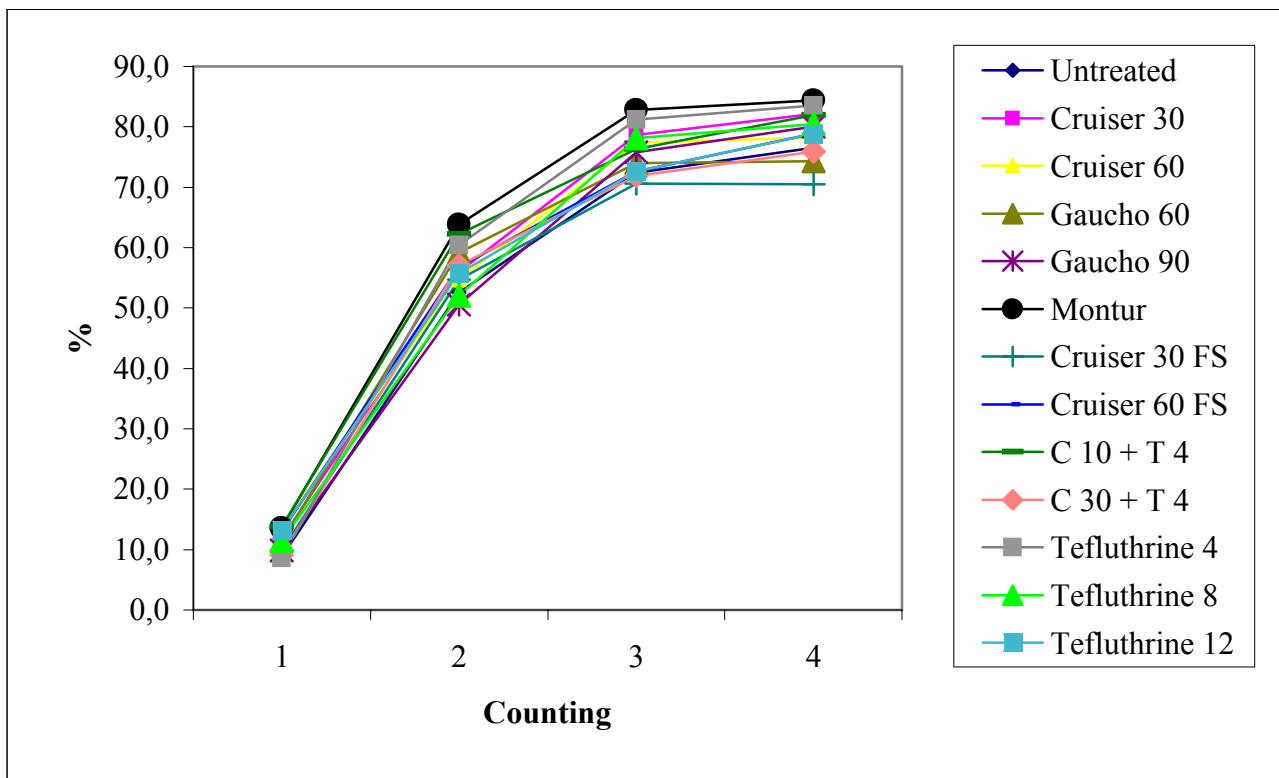


Figure 1. The number of plants/ha in the different treatments for each of the four countings. Summary over four trials.

Betning mot skadeinsekter i Europa - Syngenta

GEP-information

Uppdragsgivare:

Syngenta Seeds AB
Bengt Liljedahl
Box 302
261 23 Landskrona

Teknisk beskrivning/Technical details: The tested products have been approved by the National Chemicals Inspectorate for use in field tests in Sweden 2001.

Försöksplatser: Ädelholm

Försöksmetodik: Randomized complete block design

Avvikelser/Problems: In block II, plants were removed within the plots. The length of the plots were remeasured (to 8,5 m) and the number of plants were recalculated on the basis of the original plot size (10 m²).

Rapporten omfattar 14 sidor.
The report is comprised of 14 pages.

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Betning mot skadeinsekter i Europa - Syngenta

Syfte Att undersöka betningsmedels inverkan på plantantal, betkondition och skörd samt effekt mot skadeinsekter

Försöksplan

	<u>gram v.s./ha</u>
1 Obetat	-
2 Cruiser WS 70 30 g	thiametoxam 30 g
3 Cruiser WS 70 60 g	thiametoxam 60 g
4 Gaucho 60 g	imidaklopid 60 g
5 Gaucho 90 g	imidaklopid 90 g
6 Montur (Gaucho/Force) 15 + 4	imidaklopid 15 g + tefluthrine 4 g
7 Cruiser 600 FS 30 g	thiametoxam 30 g
8 Cruiser 600 FS 60 g	thiametoxam 60 g
9 Cruiser 600 FS + tefluthrine 10 + 4	thiametoxam 10 g + tefluthrine 4 g
10 Cruiser 600 FS + tefluthrine 30 + 4	thiametoxam 30 g + tefluthrine 4 g
11 tefluthrine 4 g	tefluthrine 4 g
12 tefluthrine 8 g	tefluthrine 8 g
13 tefluthrine 12 g	tefluthrine 12 g

Fältplan

	Ädelholm												
IV	11	10	1	7	3	13	12	8	6	5	2	4	9
III	1	13	4	10	6	3	2	11	9	8	5	7	12
II	4	3	7	13	9	6	5	1	12	11	8	10	2
I	9	8	12	5	1	11	10	6	4	3	13	2	7

Parcellbredd: 6 rader

Försöksbredd: 37,44 m

Försöklängd: 68 m

Parcelllängd, brutto: 12 m

Parcelllängd, netto: 10 m

Försöksyta: 2 546 m²

Försöksplatsinformation: Tidig sådd. Så på samma plats och samtidigt som 406 (för att kunna utnyttja flotation från 406 även i 483. Provtagningsyta 10 m mellan block I-II och mellan block III-IV.
GEP-försök.

Krav på försöksplats: Så högt insektstryck som möjligt.

Försöksåtgärder:

- | | |
|---|-------------------------------|
| 1 Generalprov 6 | 6 Bladlusräkning (SLU/Alnarp) |
| 2 Parcellvis sådd | 7 Skörd avgörs i juni |
| 3 Planträkning 3 ggr under uppkomst | |
| 4 Planträkning efter radrensning | |
| 5 Skadebedömning i fält, % friska plantor, damage score vid 2 tidpkt, alla led (SLU/Alnarp) | |

Betning mot skadeinsekter i Europa - Syngenta

Fältkort

Försöksvärd	ADB nr	Försöksnr	Odlarnummer
Danisco Sugar AB		fsb 4831/01	30 320
Gård	Adress	Telefon	
Ädelholm	205 04 Malmö		

Led

		<i>gram v.s./ha</i>		<i>gram v.s./ha</i>
1	Obetat	-	9	Cruiser 600 FS + Tefluthrine 10+4
2	Cruiser WS 70	30	10	Cruiser 600 FS + Tefluthrine 30+4
3	Cruiser WS 70	60	11	tefluthrine 4
4	Gaicho	60	12	tefluthrine 8
5	Gaicho	90	13	tefluthrine 12
6	Montur (Gaicho/Force)	15+4	14	
7	Cruiser 600 FS	30	15	
8	Cruiser 600 FS	60	16	

Försöksplan

IV	11	10	1	7	3	13	12	8	6	5	2	4	9	Ange plöjningsriktning och norrstreck
III	1	13	4	10	6	3	2	11	9	8	5	7	12	
II	4	3	7	13	9	6	5	1	12	11	8	10	2	
I	9	8	12	5	1	11	10	6	4	3	13	2	7	

I försöksplanen ingår följande bricknr:

2301 - 2352

Försöksfältet är beläget ca m i riktning från

Bruttoyta: X = m²
 Skördeyta: X = m²

Kontaktperson + telefonnr:

För försökets utförande ansvarig person + telefonnr:

Åtgärder som ska utföras i försöket

	Datum/Sign.		Datum/Sign.
1 Utstakning i fält	PM 2.4.1	<input type="text" value="15/2 HT"/>	
2 Generalprov 6	PM 2.6.1	<input type="text" value="15/2 HT"/>	
3 Parcellvis sådd	PM 2.4.2	<input type="text" value="11/4HT,TB"/>	
4 Planträkning 3 ggr under uppkomst		<input type="text" value="2/5 HT,TB"/>	
		<input type="text" value="4/5HT,TB"/>	
	PM 2.5.4	<input type="text" value="16/5HT,TB"/>	
5 Planträkning efter radrensning		<input type="text" value="23/7 TB"/>	
6 Skadebedömning i fält, %friska plantor, samt damage score vid 2 tidpkt, alla led (SLU/ Alnarp) PM			<input type="text"/>
7 Bladlusräkning (SLU/Alnarp)			<input type="text"/>
8 Skörd avgörs i juni PM 2.4.7			<input type="text" value="nej"/>

Försöksdata

PM 2.5.4

Sort: Betning: Datum för: Sådd Uppkomst Skörd

Fullständig växtföljd Antal sådda frö/m:

Notera typ av såmaskin:

Betor, år Notera typ av skördemaskin:

Stallgödsel, år

Försöksdata kontrollerat (datum+sign.):

Betning mot skadeinsekter i Europa - Syngenta

Analysdata/Analyses
Ädelholm
30 320
Jordanalys/Soil analyses

Provtagningsdatum/date	15-feb
Mullhalt (%)	2,0
Lerhalt (%)	15
Sand + grovmo (%)	47
Benämning	nmh mo LL
T-värde (mekv/100g jord)	11
S-värde (mekv/100g jord)	11
Basmättnadsgrad beräkn	>80%
Volymvikt (kg/l)	1,3

Datum + sign	16/11 LJ
pH-värde	6,6
P-AL (mg/100 g jord)	10
K-AL (mg/100 g jord)	9,6
Mg-AL (mg/10 g jord)	8,8
K/Mg-kvot	1,1
Ca-AL (mg/kg jord)	200
K-HCl (mg/100 g jord)	125
Cu-HCl (mg/kg jord)	11
Bor (mg/kg jord)	
Na-AL (mg/100 g jord)	

Kväveprov (kg/ha)
Datum + sign

Datum											
Led											
0-30 NO ₃											
NH ₄											
30-60 NO ₃											
NH ₄											
Summa 0-60											

Datum											
Led											
0-30 NO ₃											
NH ₄											
30-60 NO ₃											
NH ₄											
Summa 0-60											

Övriga analyser (blad, urin, stallgödsel)
Datum + sign

Typ											
Datum											
Led											

Betning mot skadeinsekter i Europa - Syngenta

Behandlingsdata

Ädelholm 30 320

Kem/Mek Led (dos)	Datum och klockslag	Utveckl- stadium betor	Vanligaste ogräsen: art				Temperatur (°C)		Rh (%)	Vind (m/s)	Moln 1-3	Mark fukt 1-5	Blad fukt 1-5	Till växt 1-5	Signatur
			1	2	3	4	skugga	mark							
K1															
K2															
K3															
K4															
K5															
			Noteringar												
	28/3 2001		Hela fältet gödslas med ProBeta NPK 700 kg/ha (The entire field was fertilized with ProBeta NPK 700 kg/ha)											ÅO	
	3/5 2001		TI: 0,75 G + 1 B + 0,05 T + 0,75 O											ÅO	
	13/5 2001		TII: 0,75 G + 1,5 B + 0,1 T + 1,0 O											ÅO	
	27/5 2001 06.00		TIII: 24 g S + 1,5 B + 1,0 O											ÅO	
			Radrensning utförd 20/6 (Inter-row cultivation was performed 20/6)												

Betning mot skadeinsekter i Europa - Syngenta

SBU Projektkod

2001-1-4-483

Sådatum: 010411

Planträknningar/Plant number

Drilling: 010412

Ädelholm

30 320

Behandling/treatments	Planträkning 1000-tal/ha Plant number 1000nds/ha			Planträkning Plant number efter radrensn. after inter-row cult.	
	Datum	1 010502	2 010504		3 010516
1 Obetat		8,9	52,6	72,4	76,6
2 Cruiser WS 70 30 g		11,7	56,0	78,7	82,1
3 Cruiser WS 70 60 g		13,8	54,7	77,4	78,3
4 Gaucho 60 g		11,5	59,1	74,0	74,4
5 Gaucho 90 g		9,9	50,5	75,8	80,0
6 Montur (Gaucho/Force) 15 g + 4 g		13,5	63,8	82,8	84,4
7 Cruiser 600 FS 30 g		9,9	54,7	70,6	70,5
8 Cruiser 600 FS 60 g		13,0	56,8	72,7	78,9
9 Cruiser 600 FS + tefluthrine 10 g + 4 g		13,8	62,2	76,3	81,9
10 Cruiser 600 FS + tefluthrine 30 g + 4 g		9,1	57,0	71,9	75,9
11 tefluthrine 4 g		8,6	60,4	81,3	83,6
12 tefluthrine 8 g		11,5	52,1	78,1	80,5
13 tefluthrine 12 g		13,3	55,7	72,7	78,9
CV		25,5	17,3	7,8	7,2
LSD 5%		4,2	14,0	8,5	8,1
P-value		ns	ns	ns	ns
P-value - pairwise		-	-	-	-

The length of the plots in block II were remeasured (to 8,5 m) and the number of plants were recalculated on the basis of the original plot size (10 m²).

There were no significant differences between the treatments for any of the countings during emergence or after inter-row cultivation.

Betning mot skadeinsekter i Europa - Syngenta

Bladlöss

Ädelholm

30 320

Behandling/Treatment	Bladlöss/Aphids			
	antal/pl no./plant	% angr. pl % plants aff.	antal/pl no./plant	% angr. pl % plants aff.
	Datum 04-jul	04-jul	11-jul	11-jul
1 Untreated	45,0	24,0	21,3	73,0
2 Cruiser WS 70 30 g	0,6	6,0	8,4	44,0
3 Cruiser WS 70 60 g	0,1	3,0	3,0	34,0
4 Gaucho 60 g	0,0	0,0	2,4	32,0
5 Gaucho 90 g	0,1	2,0	2,2	31,0
6 Montur (Gaucho/Force) 15 g + 4 g	1,0	8,0	5,9	46,0
7 Cruiser 600 FS 30 g	3,6	10,0	9,8	47,0
8 Cruiser 600 FS 60 g	0,2	3,0	2,8	35,0
9 Cruiser 600 FS + tefluthrine 10 g + 4 g	8,6	15,0	10,3	65,0
10 Cruiser 600 FS + tefluthrine 30 g + 4 g	0,3	2,0	9,2	44,0
11 tefluthrine 4 g	24,9	32,0	18,9	67,0
12 tefluthrine 8 g	20,6	21,0	14,7	66,0
13 tefluthrine 12 g	23,2	22,0	14,9	59,0
Signifikansnivå/Sign. level	96,1	100	100	100
Medelfel %	98,7	42,9	15,3	6,4
LSD 5 %	27,9	13,9	4,2	9,1
SNK-test	1#2,3,4,5,6,7,8,9,10	11#2,3,4,5,6,7,8,10 1#4	1#2,3,4,5,6,7,8,9,10,12,13 11#2,3,4,5,6,7,8,9,10 12,13#2,3,4,5,6,8 7,9,10#3,4,5,8	1#2,3,4,5,6,7,8,10,13 9,11,12,13#2,3,4,5,6,7,8,10 6,7#4,5

Continued on the following page.

The effect against aphids was more or less comparable between the treatments with Gaucho 60 g, Gaucho 90 g, Cruiser WS 70 60 g and Cruiser 600 FS 60 g. The effect persist over the two evaluations in July.

The combination between Cruiser 600 FS and tefluthrine (30 + 4) showed a good effect in the beginning of July. However, the effect did not seem to persist for long and in the middle of July the number of aphids/plant and number of affected plants increased compared to the above mentioned four treatments.

The effect of tefluthrine (when applied by it self) is significantly less than for many of the other insecticide treatments.

Betning mot skadeinsekter i Europa - Syngenta

Insects and plant condition

Ädelholm

30 320

Behandling/Treatment Datum/Date	Flotation 1		Flotation 2		Plant condition 1			Plant condition 2		
	Friska	Ds	Friska	Ds	Friska	Ds	Svamp	Friska	Ds	Svamp
	Healthy	0-5	Healthy	0-5	Healthy	0-5	Fungi	Healthy	0-5	Fungi
	%	0-5	%	0-5	%	0-5		%	0-5	
	010507	010507	010514	010514	010507	010507	010507	010514	010514	010514
1 Obetat	2,50	1,98	0	2,75	22,5	1,3	0	0	1,8	5,0
2 Cruiser WS 70 30 g	-	-	-	-	35,0	0,9	0	2,5	1,6	0
3 Cruiser WS 70 60 g	-	-	-	-	30,0	1,2	0	5,0	1,8	0
4 Gaucho 60 g	-	-	-	-	47,5	0,9	5,0	2,5	1,3	0
5 Gaucho 90 g	-	-	-	-	42,5	0,8	0	2,5	1,5	2,5
6 Montur (Gaucho/Force) 15 + 4	-	-	-	-	50,0	0,9	2,5	0	1,5	2,5
7 Cruiser 600 FS 30 g	-	-	-	-	45,0	0,9	0	5,0	1,5	2,5
8 Cruiser 600 FS 60 g	-	-	-	-	50,0	0,7	0	2,5	1,7	0
9 Cruiser 600 FS + tefluthrine 10 + 4	-	-	-	-	42,5	0,8	0	5,0	1,6	0
10 Cruiser 600 FS + tefluthrine 30 + 4	-	-	-	-	45,0	0,8	0	5,0	1,5	5,0
11 tefluthrine 4 g	-	-	-	-	32,5	1,0	0	7,5	1,7	2,5
12 tefluthrine 8 g	-	-	-	-	35,0	1,3	5,0	0	1,7	2,5
13 tefluthrine 12 g	-	-	-	-	50,0	0,7	0	0	1,7	0
CV	-	-	-	-	42,7	36,2	276,2	189,6	19,2	217,0
LSD 5%	-	-	-	-	24,9	0,5	3,8	7,8	0,4	5,4
P-value	-	-	-	-	ns	ns	0,0436	ns	ns	ns
P-value - pairwise	-	-	-	-	-	-	0,0115	-	-	-

With the exception of the percentage of plants infected with fungi, there were no significant differences between the treatments in plant condition. There is a weak tendency for all the seed treatments to have more healthy plants than the untreated control. The percentage of healthy plants was highest in the treatments with Montur, Cruiser 600 FS 60 g and tefluthrine 12 g.

Flotation		
antal djur/10pl i obetat led		
No. of insects/10 plants in the untreated control		
	010507	010514
<i>Onychiurus</i>	28,8	15,0
Övr hoppstjärt	7,3	3,0
Trips	-	-
Betbagge (<i>Atomaria linearis</i>)	-	1,0
Fåfoting (Symphyla)	4,3	2,8
Jordlöpare	-	-
Klotcolem (<i>Collembola</i>)	-	2,0
Tusenfoting (<i>Blaniulus guttulatus</i>)	4,5	-
Larvborstsvans (<i>Diplura</i>)	1,0	0,3

The most frequently occurring insects at the first evaluation were various genera of *Onychiurus* spp., but Symphyla, millipedes and *Diplura* also occurred.

At the second evaluation, the number of insects/10 plants were slightly lower than in the first evaluation. In addition, *Atomaria linearis* and *Collembola* also occurred.