



DEPARTMENT OF AGROECOLOGY
AARHUS UNIVERSITY

Slutrapport over GEP forsøg 23427-1, 23427-2, 23428 og 23429

UKRUDTSBEKÆMPELSE I SPINAT TIL FRØ - Herbicidafprøvning ved AU Flakkebjerg 2023



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Januar 2024

Rapport til Frøafgiftsfonden Danmark



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Titel: Ukrudtsbekæmpelse i spinat til frø
– herbicidaoprøvning ved AU Flakkebjerg 2023

Forsøgs nr: 23427-1, 23427-2, 23428 og 23429

Antal sider: 77

Lokaliteter: 23427-1 AU Flakkebjerg
23427-2 Høve, Flakkebjerg
23428 AU Flakkebjerg
23429 AU Flakkebjerg





Udført for: Frøafgiftsfonden
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Forsøgsperiode: Marts 2023 – September 2023
Rapport forfatter: Andrius Hansen Kemezys

Fagfællebedømmer: Peter Hartvig

Forsøgsleder: Peter Hartvig

Mark teknikere: Per Elmegaard Andersen og Andrius Hansen Kemezys

Laboratorie tekniker: Lena Christensen

Udførelseskriterier: Udført efter GEP retningslinjer (Good experimental practice)

Publicering: Offentliggørelse er kun tilladt med kildeangivelse, og kun efter aftale med forfatteren

Rådata: Kan rekvireres hos forfatteren

Det bekræftes hermed, at forsøg i denne forsøgsserie er gennemført i overensstemmelse med principperne for GEP:

23. Januar 2024

23427-1 Strategi forsøg i spinat til frø

Udkast til strategiforsøg med ukrudtsbekæmpelse i spinat til frø														
	A	B	C		D		E		F		G			
	Efter såning/før fremspiring. Jordmidlerne på fugtig jord		Kimblade		1 uge senere (2 bl.)		1 uge senere (4 bl.)		4-6 dage efter E (6 bl.)		4-6 dage efter F			
1	Ubehandlet/glyphosat kontrol (parcellerne deles 50/50)													
2	Centium + Proman	0,15 + 0,5	Glyphosat hvis behov	Betanal	1,0	Betanal	1,0	Betanal (kun ved behov)	1,0	Pixxaro EC E	0,125			
3						Pixxaro EC	0,05			Pixxaro EC	0,075			
4									Pixxaro EC	0,05			Pixxaro EC	0,075
5											Pixxaro EC E	0,125		
6							Goltix Gold	0,5	Goltix Gold	0,5				
7									Goltix Gold	0,5	Goltix Gold	0,5		
8									Pixxaro EC + Goltix Gold	0,05 + 0,5	Goltix Gold	0,5		
9									Pixxaro EC + Goltix Gold	0,05 + 0,5	Goltix Gold	0,5	Pixxaro EC E	0,075
10									Pixxaro EC + Proman	0,05 + 0,15			Pixxaro EC + Proman	0,075 + 0,15

Spinat strategi forsøg

Trial ID: 23427-1

Protocol ID: Location: Trial Year: 2022

Project ID: Project ID 2: Project ID 3:

Study Director: Peter Hartvig Sponsor Contact:

Investigator: Andrius Hansen Kemezys

Trt No.	Type	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	Appl Description	Appl Timing
1	CHK	Untreated Check							
2	HERB	Centium 36 CS	360	CS	0,15	L/ha	A	Efter såning på fugtig jord	
	HERB	Proman	500	SC	0,5	L/ha	A	Efter såning på fugtig jord	
	HERB	Roundup Bio	360	SC	1,5	L/ha	B	Lige inden fremspiring	
	HERB	Betanal	160	SC	1	L/ha	C	BBCH 10	
	HERB	Betanal	160	SC	1	L/ha	D	1 WA-C (BBCH 12)	
	HERB	Betanal	160	SC	1	L/ha	E	1 WA-D (BBCH 14) - Optional	
	HERB	Pixxaro EC	305	EC	0,125	L/ha	F	4-6 DAE (BBCH 16)	
3	HERB	Centium 36 CS	360	CS	0,15	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Pixxaro EC	305	EC	0,05	L/ha	D		
	HERB	Pixxaro EC	305	EC	0,075	L/ha	F		
4	HERB	Centium 36 CS	360	CS	0,15	L/ha	A	4-6 DAF	
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Pixxaro EC	305	EC	0,05	L/ha	E		
	HERB	Pixxaro EC	305	EC	0,075	L/ha	G		
5	HERB	Centium 36 CS	360	CS	0,15	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Pixxaro EC	305	EC	0,125	L/ha	F		
6	HERB	Centium 36 CS	360	CS	0,15	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Goltix Gold	700	SC	0,5	L/ha	D		
	HERB	Goltix Gold	700	SC	0,5	L/ha	E		
7	HERB	Centium 36 CS	360	CS	0,15	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Goltix Gold	700	SC	0,5	L/ha	E		
	HERB	Goltix Gold	700	SC	0,5	L/ha	F		
8	HERB	Centium 36 CS	360	CS	0,15	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Pixxaro EC	305	EC	0,05	L/ha	E		
	HERB	Goltix Gold	700	SC	0,5	L/ha	E		
	HERB	Goltix Gold	700	SC	0,5	L/ha	F		
9	HERB	Centium 36 CS	360	CS	0,15	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Pixxaro EC	305	EC	0,05	L/ha	E		
	HERB	Goltix Gold	700	SC	0,5	L/ha	E		
	HERB	Goltix Gold	700	SC	0,5	L/ha	F		
	HERB	Pixxaro EC	305	EC	0,075	L/ha	G		
10	HERB	Centium 36 CS	360	CS	0,15	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Pixxaro EC	305	EC	0,05	L/ha	E		
	HERB	Proman	500	SC	0,15	L/ha	E		
	HERB	Pixxaro EC	305	EC	0,075	L/ha	G		
	HERB	Proman	500	SC	0,15	L/ha	G		

Replications: 4, Untreated treatments: 1, Conduct under GLP/GEP: Yes (GEP with no protection), Design: Randomized Complete Block (RCB), Treatment units: Treated 'Plot' experimental unit size, Dry Form. Unit: %, Treated 'Plot'

experimental unit size Width: 4 meters, Treated 'Plot' experimental unit size Length: 6 meters, Application amount: 200 L/ha, Mix size: 1.92 L, Format definitions: G-All7.def, G-All7.frm

Trial Comments

Spinat strategi forsøg
 Trial ID: 23427-1
 Protocol ID: Location: Trial Year: 2022
 Project ID: Project ID 2: Project ID 3:
 Study Director: Peter Hartvig Sponsor Contact:
 Investigator: Andrius Hansen Kemezys

Trial Map Treatment Description

Trt	Code	Description
1	CHK	Untreated Check
2		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Betanal 1 L/ha;Beta
3		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC 0.05 L/h
4		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC 0.05 L/h
5		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC 0.05 L/h
6		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC 0.05 L/h
7		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC 0.05 L/h
8		Roundup Bio 1.5 L/ha
9		Roundup Bio 1.5 L/ha
10		Roundup Bio 1.5 L/ha



Spinat strategi forsøg

Trial ID: 23427-1

Protocol ID: Location: Trial Year: 2022

Project ID: Project ID 2: Project ID 3:

Study Director: Peter Hartvig Sponsor Contact:

Investigator: Andrius Hansen Kemezys

General Trial Information

Study Director: Peter Hartvig

Investigator: Andrius Hansen Kemezys

Discipline: H herbicide

Status: E established

ARM Trial Created On: 31-3-2023

Completion Date: 4-1-2024 **Last Possible Tour Visit:** 10-8-2023

Trial Location

City: Flakkebjerg

Country: DNK Denmark

State/Prov.: Region Sjælland

Postal Code: 4200

Climate Zone: EPOMAR Eppo Maritime

Conclusions:**Konklusion 23427-1 Strategi i spinat.**

Forsøget blev udført på forskningscentret AU Flakkebjerg. Forsøget har til formål at undersøge effektivitet og selektivitet af forskellige ukrudtsstrategier til spinat til frø i et scenarie, hvor phenmedipham ikke længere er tilladt. I forsøget indgik 10 led, led 1 ubehandlet og led 2-10 strategier med forskellige midler, behandlingstidspunkter og doser.

Forsøget er behandlet 7 gange, A lige efter såning 27. april, B før fremspiring 1. maj, C afgrøden med kimblade 8. maj, D en uge senere 15. maj BBCH12, E igen en uge senere 22. maj BBCH 14. Behandling F 26. majer i stadiet BBCH 16 4-6 dage efter E og behandling G 31. maj igen 4-6 dage efter F. Alle led med en behandling A Centium og Proman lige efter såning og behandling B, glyphosat før fremspiring. Led 2 referencebehandling behandlet med Betanal 3 gange C, D og E samt i F med Pixxaro EC. Led 3 er behandlet 2 gange med Pixxaro EC i D og F. Led 4 ens med led 3 dog er Pixxaro EC anvendt i E og G. I led 5 er der kun anvendt Pixxaro EC 1 gang i F. Led 6 Goltix Gold i D og E, led 7 samme behandling med Goltix Gold i E og F. I led 8 er der anvendt Pixxaro EC+ Goltix Gold i E samt Goltix Gold i F, led 9 samme strategi som led 8 + Pixxaro EC i G. Led 10 her er strategien Pixxaro EC + Proman i E og G.

Forsøget blev etableret med todelte parceller, hvor den ene del blev dampbehandlet for at undgå konkurrence fra ukrudt hvor selektivtbedømmelser og udbytteregistreringer blev foretaget, mens den ikke dampbehandlede del af parcellen blev anvendt til registrering af ukrudt.

Forsøget blev bedømt 4 gange for skade igennem vækstsæsonen, hhv. d. 22. maj ved behandling E, 26. maj ved behandling F og 9. juni 8 dage efter G behandlingen samt 26. juni 25 dage efter G behandlingen. Effekten på ukrudt er bedømt 2 gange hhv. d. 9. juni og d. 26. juni, bestanden af ukrudt var dog meget lille på forsøgsarealet. Derfor er der kun bedømt på andet 2-kimbladet ukrudt (BBBBB), ved den første bedømmelse og ved den sidste bedømmelse er der også bedømt på hvidmelet gåsefor (CHEAL).

Resultatet fra effektbedømmelsen ultimo juni 26 DA.E.G viser, at de fleste strategier virker godt over for de CHEAL, især i led 2, 4 og 9 hvor effekten er signifikant bedre end i de andre led 96-99%. I led 7 er effekten på CHEAL signifikant dårligst 36 %, i de andre behandlet led er effekten 56-87%. Over for andet 2-kimbladet ukrudt (BBBBB) er effekten noget mere moderat 56-74%, her er det igen led 7 som har den dårligste effekt 56%, der er dog ingen signifikant forskel mellem leddene.

Skadebedømmelserne ultimo maj ved F behandlingen, viser at afgrøden er relativt påvirket af flere af behandlingerne, med moderate til kraftige skader 17-39% skade, kun i led 5 som på dette tidspunkt har fået behandling A og B er skaden signifikant lavest 5%. Ved bedømmelsen primo juni 8 DA.E.G er skaderne på samme niveau, som bedømmelsen ultimo maj, dog er skaderne i led 7, 8, 9 og 10 signifikant kraftigere end i led 2, 3, 4, 5 og 6. Ved den sidste bedømmelser ultimo juni 25 DA.E.G er skaderne noget aftaget. 3-18%, højest i led 6, 7 og 11 hvor skaderne er 14-18%, der er dog ingen signifikant forskel mellem behandlingerne.

Udbyttet i ubehandlet var 959 kg/ha, det meget lave udbytte skyldes at der ved en fejl er blevet høstet i del af parcellen som ikke er dampbehandlet. Udbytte registreringen kunne ikke vise nogen signifikant forskel, mellem leddene, eller i forhold til ubehandlet. Men i alle de behandlet led var udbyttet højere end i ubehandlet, især i led 2, 6, 8 og 9 som havde de højeste udbytter 1438- 1941 kg/ha, til trods for at det også var i nogle af disse led som der var størst skader i.

Ud fra dette forsøg er det svært at pege på en strategi, som giver lave skader på afgrøden og god effekt på ukrudt samt et højt udbyttet. Men i led 5 som er behandlet med Centium 36 CS + Proman på tidspunkt A og Roundup Bio lige før fremspiring B samt med Pixxaro EC på behandlingstidspunkt F, i dette led er der meget lave skadebedømmelser og effekten på ukrudt er ligeledes middel/acceptabelt, udbyttet er også ok 1340 kg/ha.

Contacts	
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Study Director: Peter Hartvig	
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City: 4200 Slagelse	Mobile No.: +4522283301
Role: INVEST	investigator
Investigator: Andrius Hansen Kemezys	

Crop Description	
Crop 1: C SPQOL Spinacia oleracea Spinach	BBCH Scale: BVNH
Entry Date: 17-7-2023	Stage Scale: BBCH
Harvest Date: 10-8-2023	Harvest Equipment: By hand
	Harvested Width: 0,5 m
	Harvested Length: 4 m

Pest Description			
Pest 1 Type: W	Code: LAMPU	Lamium purpureum	Entry Date: 17-7-2023
	Common Name: purple deadnettle		Stage Scale: BBCH
Pest 2 Type: W	Code: GERPU	Geranium pusillum	Entry Date: 17-7-2023
	Common Name: Small-flowered cranesbill		Stage Scale: BBCH
Pest 3 Type: W	Code: CHEAL	Chenopodium album	Entry Date: 17-7-2023
	Common Name: common lambsquarters		Stage Scale: BBCH
Pest 4 Type: W	Code: BBBBB	Broad-leaved plants	Entry Date: 17-7-2023
	Common Name: Broad-leaved plants		Stage Scale: BBCH

Site and Design	
Treated Plot Width: 4	m
Treated Plot Length: 6	m
Treated Plot Area: 24,0	m ²
Replications: 4	Treatments: 10
Plots: 40	Study Design: RACOB
	Randomized Complete Block (RCB)

Application Description					
	A	B	C	D	E
Date	27-4-2023	1-5-2023	8-5-2023	15-5-2023	22-5-2023
Start Time	14:00	13:45	12:20	13:30	14:30
Stop Time	14:30	14:20	12:40	14:00	15:00
Method	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY
Placement	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL
Applied By	AHK	AHK	AHK	VLI	AHK
Entry Date	19-6-2023	19-6-2023	19-6-2023	19-6-2023	19-6-2023
Air Temperature Start, Stop		-; 16,4 C	-; 15,5 C	-; 21,6 C	-; 21,7 C
% Relative Humidity Start, Stop		-; 24,5	-; 28	-; 42	-; 23
Wind Velocity+Dir. Start		3,6 MPS; SW	5,6 MPS; SW	1,2 MPS; NW	6 MPS; W
Wet Leaves (Y/N)		N; no	N; no	N; no	N; no
Soil Temperature		13,6 C	14,3 C	22,6 C	23,9 C
Soil Moisture		DRY	DRY	DRY	DRY
% Cloud Cover		65	10	75	40

	F	G
Date	26-5-2023	31-5-2023
Start Time	10:50	14:15
Stop Time	11:30	14:40
Method	SPRAY	SPRAY
Placement	BROFOL	BROFOL
Applied By	AHK	AHK
Entry Date	19-6-2023	19-6-2023
Air Temperature Start, Stop	-; 16,3 C	-; 19,6 C
% Relative Humidity Start, Stop	-; 46	-; 42
Wind Velocity+Dir. Start	4,8 MPS; NW	3,3 MPS; NW
Wet Leaves (Y/N)	N; no	N; no
Soil Temperature	17,7 C	20,9 C
Soil Moisture	DRY	DRY
% Cloud Cover	20	70

Crop Stage At Each Application

	A	B	C	D	E
Crop 1 Code, BBCH Scale	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH
Stage Majority, Percent		07; -	10; -	12; -	14; -
Height Average					
Coverage					8 %

	F	G
Crop 1 Code, BBCH Scale	SPQOL; BVNH	SPQOL; BVNH
Stage Majority, Percent	16; -	18; -
Height Average	6 cm	6 cm
Coverage	8 %	8 %

Pest Stage At Each Application

	A	B	C	D
Pest 1 Code, Type, Scale	LAMPU; W; BBCH	LAMPU; W; BBCH	LAMPU; W; BBCH	LAMPU; W; BBCH
Stage Majority, Percent				
Density Average				
Coverage				
Pest 2 Code, Type, Scale	GERPU; W; BBCH	GERPU; W; BBCH	GERPU; W; BBCH	GERPU; W; BBCH
Stage Majority, Percent				
Density Average				
Coverage				
Pest 3 Code, Type, Scale	CHEAL; W; BBCH	CHEAL; W; BBCH	CHEAL; W; BBCH	CHEAL; W; BBCH
Stage Majority, Percent				
Density Average				
Coverage				
Pest 4 Code, Type, Scale	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH
Density Average			0,75 PLA/m2	
Coverage			1 %	

	E	F	G
Pest 1 Code, Type, Scale	LAMPU; W; BBCH	LAMPU; W; BBCH	LAMPU; W; BBCH
Stage Majority, Percent	14; -		
Density Average	0,75 PLA/m ²		
Coverage	1 %		
Pest 2 Code, Type, Scale	GERPU; W; BBCH	GERPU; W; BBCH	GERPU; W; BBCH
Stage Majority, Percent	14; -		
Density Average	1 PLA/m ²		
Coverage	1 %		
Pest 3 Code, Type, Scale	CHEAL; W; BBCH	CHEAL; W; BBCH	CHEAL; W; BBCH
Stage Majority, Percent	12; -	65; -	
Density Average	1,25 PLA/m ²	4,5 PLA/m ²	
Coverage	1 %	5 %	
Pest 4 Code, Type, Scale	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH
Density Average	2,25 PLA/m ²	4,5 PLA/m ²	
Coverage	1 %	4 %	

Application Equipment						
	B	C	D	E	F	G
Equipment Name	Selvkørende	Verners sprø	Selvkørende	Selvkørende	Selvkørende	Selvkørende
Equipment Type	SPRAYE	SPRAY	SPRAYE	SPRAYE	SPRAYE	SPRAYE
Operation Pressure	3,7 BAR	2,7 BAR	3,7 BAR	3,7 BAR	3,7 BAR	3,7 BAR
Nozzle Model	LD015-110	LD015-110	LD015-110	LD015-110	LD015-110	LD015-110
Nozzle Type	Hardi	Hardi	Hardi	Hardi	Hardi	Hardi
Nozzle Spacing	50,0 cm	50,0 cm	50,0 cm	50,0 cm	50,0 cm	50,0 cm
Nozzles/Row	5,0	5,0	5,0	5,0	5,0	5,0
Band Width	50,0 0	50,0 0	50,0 0	50,0 0	50,0 0	50,0 0
Boom Length	2,5 m	2,5 m	2,5 m	2,5 m	2,5 m	2,5 m
Boom Height	50,0 cm	50,0 cm	50,0 cm	50,0 cm	50,0 cm	50,0 cm
Ground Speed	3,6 KPH	3,4 KPH	3,6 KPH	3,6 KPH	3,6 KPH	3,6 KPH
Application Amount	200 WATER	200 L/ha	200 WATER	200 WATER	200 WATER	200 WATER
Mix Size	3,0 liters	3,0 liters	3,0 liters	3,0 liters	3,0 liters	3,0 liters

Notes			
Context	Date	By	Notes
STATUS	31-3-2023	Andrius Hansen Kemezys	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	2-6-2023	Dorian Vigneron	Automatically added by ARM: Status changed to: E: changed by (XDAVID).
STATUS	2-6-2023	Dorian Vigneron	Automatically added by ARM: Trial Status updated to 'E' when Rating Date entered.

Spinat strategi forsøg

Trial ID: 23427-1

Protocol ID: Location: Trial Year: 2022

Project ID: Project ID 2: Project ID 3:

Study Director: Peter Hartvig Sponsor Contact:

Investigator: Andrius Hansen Kemezs

Assessed By	AHK	AHK			AHK
Rating Date	22-5-2023	26-5-2023	9-6-2023	9-6-2023	26-6-2023
Rating Type	PHYGEN	PHYGEN	CONTRO	PHYGEN	PHYGEN
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
B BCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach
Crop Stage Scale	B BCH	B BCH			B BCH
Crop Stage Majority/Min/Max	14; 14; 14	16; 16; 16			65; 65; 65
Pest Type			W; Weed		
Pest Code			BBBBB		
Pest Scientific Name			Broad-leaved plants		
Pest Name			Broad-leaved plants		
Days After First/Last Applic.	25; 7	29; 4	43; 9	43; 9	60; 26
Trt-Eval Interval	0 DA-E	0 DA-F	9 DA-G	9 DA-G	26 DA-G
Number of Decimals	0	0	0	0	0
Trt No.	Treatment Name	Rate	Appl Unit	Appl Code	Appl Timing
1	Untreated Check	0			0
2	Centium 36 CS	0,15 L/ha	A		23 b
	Proman	0,5 L/ha	A		26 abc
	Roundup Bio	1,5 L/ha	B		89 a
	Betanal	1 L/ha	C		15 c
	Betanal	1 L/ha	D		9 -
	Betanal	1 L/ha	E		
	Pixxaro EC	0,125 L/ha	F		
3	Centium 36 CS	0,15 L/ha	A		26 b
	Proman	0,5 L/ha	A		23 bc
	Roundup Bio	1,5 L/ha	B		63 bc
	Pixxaro EC	0,05 L/ha	D		10 c
	Pixxaro EC	0,075 L/ha	F		8 -
4	Centium 36 CS	0,15 L/ha	A		0 c
	Proman	0,5 L/ha	A		18 c
	Roundup Bio	1,5 L/ha	B		73 abc
	Pixxaro EC	0,05 L/ha	E		13 c
	Pixxaro EC	0,075 L/ha	G		4 -
5	Centium 36 CS	0,15 L/ha	A		4 c
	Proman	0,5 L/ha	A		5 d
	Roundup Bio	1,5 L/ha	B		66 bc
	Pixxaro EC	0,125 L/ha	F		13 c
6	Centium 36 CS	0,15 L/ha	A		35 a
	Proman	0,5 L/ha	A		39 a
	Roundup Bio	1,5 L/ha	B		64 bc
	Goltix Gold	0,5 L/ha	D		20 c
	Goltix Gold	0,5 L/ha	E		14 -
7	Centium 36 CS	0,15 L/ha	A		0 c
	Proman	0,5 L/ha	A		25 abc
	Roundup Bio	1,5 L/ha	B		55 c
	Goltix Gold	0,5 L/ha	E		30 b
	Goltix Gold	0,5 L/ha	F		15 -
8	Centium 36 CS	0,15 L/ha	A		0 c
	Proman	0,5 L/ha	A		36 ab
	Roundup Bio	1,5 L/ha	B		76 ab
	Pixxaro EC	0,05 L/ha	E		38 ab
	Goltix Gold	0,5 L/ha	E		5 -
	Goltix Gold	0,5 L/ha	F		
9	Centium 36 CS	0,15 L/ha	A		0 c
	Proman	0,5 L/ha	A		34 ab
	Roundup Bio	1,5 L/ha	B		84 ab
	Pixxaro EC	0,05 L/ha	E		41 a
	Goltix Gold	0,5 L/ha	E		18 -
	Goltix Gold	0,5 L/ha	F		
	Pixxaro EC	0,075 L/ha	G		

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Untreated treatment(s) 1 excluded from analysis.

^Calculated from residual.

Assessed By	AHK	AHK			AHK
Rating Date	22-5-2023	26-5-2023	9-6-2023	9-6-2023	26-6-2023
Rating Type	PHYGEN	PHYGEN	CONTRO	PHYGEN	PHYGEN
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach
Crop Stage Scale	BBCH	BBCH			
Crop Stage Majority/Min/Max	14; 14; 14	16; 16; 16			65; 65; 65
Pest Type			W; Weed		
Pest Code			BBBBB		
Pest Scientific Name			Broad-leaved plants		
Pest Name			Broad-leaved plants		
Days After First/Last Applic.	25; 7	29; 4	43; 9	43; 9	60; 26
Trt-Eval Interval	0 DA-E	0 DA-F	9 DA-G	9 DA-G	26 DA-G
Number of Decimals	0	0	0	0	0
Trt Treatment No. Name	Rate	Appl Unit	Appl Code	Timing	
10 Centium 36 CS	0,15	L/ha	A		
Proman	0,5	L/ha	A		
Roundup Bio	1,5	L/ha	B		
Pixxaro EC	0,05	L/ha	E		
Proman	0,15	L/ha	E		
Pixxaro EC	0,075	L/ha	G		
Proman	0,15	L/ha	G		
LSD P=.05	7,2			14,1	17,8
CV	50,41			13,42	129,28
Shapiro-Wilk^	0,9058*			0,9873	0,9599
P(Shapiro-Wilk)^	0,0049*			0,9455	0,214
Replicate F	0,501			6,834	0,609
Replicate Prob(F)	0,6850			0,0017	0,6159
Treatment F	32,971			5,324	0,745
Treatment Prob(F)	0,0001			0,0007	0,6519

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Untreated treatment(s) 1 excluded from analysis.

15/77

^Calculated from residual.

Assessed By	AHK	AHK					
Rating Date	26-6-2023	26-6-2023					
Rating Type	CONTRO	CONTRO					
Rating Unit/Min/Max	%; 0; 100	%; 0; 100					
Crop Type, Code	C; SPQOL	C; SPQOL					
BBCH Scale	BVNH	BVNH					
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea					
Crop Name	Spinach	Spinach					
Crop Stage Scale	BBCH	BBCH					
Crop Stage Majority/Min/Max	65; 65; 65	65; 65; 65					
Pest Type	W; Weed	W; Weed					
Pest Code	CHEAL	BBBBB					
Pest Scientific Name	Chenopodium album	Broad-leaved plants					
Pest Name	common lambsquarters	Broad-leaved plants					
Days After First/Last Applic.	60; 26	60; 26					
Trt-Eval Interval	26 DA-G	26 DA-G					
Number of Decimals	0	0					
Trt No.	Treatment Name	Rate	Appl Unit	Appl Code	Appl Timing		
1	Untreated Check						
2	Centium 36 CS	0,15 L/ha	A			98 a	69 -
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Betanal	1 L/ha	C				
	Betanal	1 L/ha	D				
	Betanal	1 L/ha	E				
	Pixxaro EC	0,125 L/ha	F				
3	Centium 36 CS	0,15 L/ha	A			88 ab	68 -
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Pixxaro EC	0,05 L/ha	D				
	Pixxaro EC	0,075 L/ha	F				
4	Centium 36 CS	0,15 L/ha	A			96 a	71 -
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Pixxaro EC	0,05 L/ha	E				
	Pixxaro EC	0,075 L/ha	G				
5	Centium 36 CS	0,15 L/ha	A			81 ab	70 -
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Pixxaro EC	0,125 L/ha	F				
6	Centium 36 CS	0,15 L/ha	A			56 bc	63 -
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Goltix Gold	0,5 L/ha	D				
	Goltix Gold	0,5 L/ha	E				
7	Centium 36 CS	0,15 L/ha	A			36 c	56 -
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Goltix Gold	0,5 L/ha	E				
	Goltix Gold	0,5 L/ha	F				
8	Centium 36 CS	0,15 L/ha	A			83 ab	74 -
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Pixxaro EC	0,05 L/ha	E				
	Goltix Gold	0,5 L/ha	E				
	Goltix Gold	0,5 L/ha	F				
9	Centium 36 CS	0,15 L/ha	A			99 a	61 -
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Pixxaro EC	0,05 L/ha	E				
	Goltix Gold	0,5 L/ha	E				
	Goltix Gold	0,5 L/ha	F				
	Pixxaro EC	0,075 L/ha	G				

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Untreated treatment(s) 1 excluded from analysis.

^Calculated from residual.

Assessed By	AHK	AHK
Rating Date	26-6-2023	26-6-2023
Rating Type	CONTRO	CONTRO
Rating Unit/Min/Max	%; 0; 100	%; 0; 100
Crop Type, Code	C; SPQOL	C; SPQOL
BBCH Scale	BVNH	BVNH
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea
Crop Name	Spinach	Spinach
Crop Stage Scale	BBCH	BBCH
Crop Stage Majority/Min/Max	65; 65; 65	65; 65; 65
Pest Type	W; Weed	W; Weed
Pest Code	CHEAL	BBBBB
Pest Scientific Name	Chenopodium album	Broad-leaved plants
Pest Name	common lambsquarters	Broad-leaved plants
Days After First/Last Applic.	60; 26	60; 26
Trt-Eval Interval	26 DA-G	26 DA-G
Number of Decimals	0	0
Trt Treatment No. Name	Rate	Appl Unit Code Timing
10 Centium 36 CS	0,15 L/ha A	98 a
Proman	0,5 L/ha A	70 -
Roundup Bio	1,5 L/ha B	
Pixxaro EC	0,05 L/ha E	
Proman	0,15 L/ha E	
Pixxaro EC	0,075 L/ha G	
Proman	0,15 L/ha G	
LSD P=.05	24,5	17,4
CV	20,6	17,87
Shapiro-Wilk^	0,9442	0,9757
P(Shapiro-Wilk)^	0,0687	0,5994
Replicate F	0,620	3,800
Replicate Prob(F)	0,6091	0,0232
Treatment F	6,646	0,890
Treatment Prob(F)	0,0001	0,5398

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Untreated treatment(s) 1 excluded from analysis.

^Calculated from residual.

Spinat strategi forsøg

Trial ID: 23427-1

Protocol ID:

Location: Trial Year: 2022

Project ID: Project ID 2: Project ID 3:

Study Director: Peter Hartvig

Sponsor Contact:

Investigator: Andrius Hansen Kemezys

Rating Type

PHYGEN = phytotoxicity - general / injury

CONTRO = control / burndown or knockdown

Rating Unit/Min/Max

%, 0, 100 = percent

Crop Type Code

C = EPPO species (Bayer) codes

SPQOL, BVNH, Spinacia oleracea, Spinach = US

Crop Stage Scale

BBCH = BBCH uniform plant stages

Crop Stage Majority/Min/Max

14 = 4th true leaf unfolded

16 = 6th true leaf unfolded

65 = Full flowering: 50% of flowers open

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

BBBBB, Broad-leaved plants, Broad-leaved plants = US

CHEAL, Chenopodium album, common lambsquarters = US

Spinat strategi forsøg

Trial ID: 23427-1

Protocol ID:

Location: Trial Year: 2022

Project ID: Project ID 2: Project ID 3:

Study Director: Peter Hartvig

Sponsor Contact:

Investigator: Andrius Hansen Kemezsyz

Assessed By		PEA	PEA
Rating Date		10-8-2023	10-8-2023
Rating Type		YIELD	YIELD
Rating Unit/Min/Max		kg; -; -	kg/ha; -; -
Collection Basis		2 m2	1 ha
Crop Type, Code		C; SPQOL	C; SPQOL
BBCH Scale		BVNH	BVNH
Crop Scientific Name		Spinacia oleracea	Spinacia oleracea
Crop Name		Spinach	Spinach
Crop Stage Scale		BBCH	BBCH
Crop Stage Majority/Min/Max		89; 89; 89	89; 89; 89
Pest Type			
Pest Code			
Pest Scientific Name			
Pest Name			
Days After First/Last Applic.		105; 71	105; 71
Trt-Eval Interval			
Number of Decimals		3	0
Trt No.	Treatment Name	Rate	Rate Appl Unit Timing
1	Untreated Check		0,192 - 959 -
2	Centium 36 CS Proman Roundup Bio Betanal Betanal Betanal Pixxaro EC	0,15 L/ha 0,5 L/ha 1,5 L/ha 1 L/ha 1 L/ha 1 L/ha 0,125 L/ha	0,291 - 1453 -
3	Centium 36 CS Proman Roundup Bio Pixxaro EC Pixxaro EC	0,15 L/ha 0,5 L/ha 1,5 L/ha 0,05 L/ha 0,075 L/ha	0,248 - 1238 -
4	Centium 36 CS Proman Roundup Bio Pixxaro EC Pixxaro EC	0,15 L/ha 0,5 L/ha 1,5 L/ha 0,05 L/ha 0,075 L/ha	0,249 - 1243 -
5	Centium 36 CS Proman Roundup Bio Pixxaro EC	0,15 L/ha 0,5 L/ha 1,5 L/ha 0,125 L/ha	0,268 - 1340 -
6	Centium 36 CS Proman Roundup Bio Goltix Gold Goltix Gold	0,15 L/ha 0,5 L/ha 1,5 L/ha 0,5 L/ha 0,5 L/ha	0,288 - 1438 -
7	Centium 36 CS Proman Roundup Bio Goltix Gold Goltix Gold	0,15 L/ha 0,5 L/ha 1,5 L/ha 0,5 L/ha 0,5 L/ha	0,266 - 1329 -
8	Centium 36 CS Proman Roundup Bio Pixxaro EC Goltix Gold Goltix Gold	0,15 L/ha 0,5 L/ha 1,5 L/ha 0,05 L/ha 0,5 L/ha 0,5 L/ha	0,388 - 1941 -
9	Centium 36 CS Proman Roundup Bio Pixxaro EC Goltix Gold Goltix Gold Pixxaro EC	0,15 L/ha 0,5 L/ha 1,5 L/ha 0,05 L/ha 0,5 L/ha 0,5 L/ha 0,075 L/ha	0,359 - 1796 -

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

^Calculated from residual.

Assessed By	PEA	PEA
Rating Date	10-8-2023	10-8-2023
Rating Type	YIELD	YIELD
Rating Unit/Min/Max	kg; -; -	kg/ha; -; -
Collection Basis	2 m2	1 ha
Crop Type, Code	C; SPQOL	C; SPQOL
BBCH Scale	BVNH	BVNH
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea
Crop Name	Spinach	Spinach
Crop Stage Scale	BBCH	BBCH
Crop Stage Majority/Min/Max	89; 89; 89	89; 89; 89
Pest Type		
Pest Code		
Pest Scientific Name		
Pest Name		
Days After First/Last Applic.	105; 71	105; 71
Trt-Eval Interval		
Number of Decimals	3	0
Trt Treatment	Rate Appl	
No. Name	Rate Unit Timing	
10 Centium 36 CS	0,15 L/ha	0,256 -
Proman	0,5 L/ha	1281 -
Roundup Bio	1,5 L/ha	
Pixxaro EC	0,05 L/ha	
Proman	0,15 L/ha	
Pixxaro EC	0,075 L/ha	
Proman	0,15 L/ha	
LSD P=.05	0,1181	590,6
CV	29,04	29,04
Shapiro-Wilk^	0,9838	0,9838
P(Shapiro-Wilk)^	0,826	0,826
Replicate F	2,960	2,960
Replicate Prob(F)	0,0500	0,0500
Treatment F	1,939	1,939
Treatment Prob(F)	0,0888	0,0888

Rating Type

YIELD = yield

Rating Unit/Min/Max

kg, , = kilogram

kg/ha, , = kilograms per hectare

m2 = square meter

ha = hectare

Crop Type, Code

C = EPPO species (Bayer) codes

SPQOL, BVNH, Spinacia oleracea, Spinach = US

Crop Stage Scale

BBCH = BBCH uniform plant stages

Crop Stage Majority/Min/Max

89 = Fully ripe: seeds on the whole plant of typical colour and hard

Spinat strategi forsog
 Trial ID: 23427-1
 Protocol ID: Location: Trial Year: 2022
 Project ID: Project ID 2: Project ID 3:
 Study Director: Peter Hartvig Sponsor Contact:
 Investigator: Andrius Hansen Kemezys

Assessed By	AHK	AHK			AHK	AHK	AHK	PEA	PEA	
Rating Date	22-5-2023	26-5-2023	9-6-2023	9-6-2023	26-6-2023	26-6-2023	26-6-2023	10-8-2023	10-8-2023	
Part Rated								SEED; C	SEED; C	
Rating Type	PHYGEN	PHYGEN	CONTRO	PHYGEN	PHYGEN	CONTRO	CONTRO	YIELD	YIELD	
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	kg; -; -	kg/ha; -; -	
Collection Basis								2 m2	1 ha	
Number of Subsamples	1	1	1	1	1	1	1	1	1	
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	
Crop Stage Majority/Min/Max	14; 14; 14	16; 16; 16			65; 65; 65	65; 65; 65	65; 65; 65	89; 89; 89	89; 89; 89	
Pest Type			W; Weed			W; Weed	W; Weed			
Pest Code			BBBBB			CHEAL	BBBBB			
Pest Name			Broad-leaved plants			common lambsquarters	Broad-leaved plants			
Days After First/Last Applic.	25; 7	29; 4	43; 9	43; 9	60; 26	60; 26	60; 26	105; 71	105; 71	
Trt-Eval Interval	0 DA-E	0 DA-F	9 DA-G	9 DA-G	26 DA-G	26 DA-G	26 DA-G			
ARM Action Codes										
Number of Decimals	0	0	0	0	0	0	0	3	T1	
Data Entry Date	19-6-2023	19-6-2023	19-6-2023	19-6-2023	26-6-2023	26-6-2023	26-6-2023	5-1-2024	0	
Footnote Number								1		
Trt Treatment										
Rate Appl Appl										
No. Name										
Rate Unit Code Timing Plot										
1 Untreated Check	103	0	0	0	0	0	0	0,186	930	
	206	0	0	0	0	0	0	0,203	1015	
	308	0	0	0	0	0	0	0,153	765	
	409	0	0	0	0	0	0	0,225	1125	
Mean =	0	0	0	0	0	0	0	0,192	959	
2 Centium 36 CS 0,15 L/ha A	102	20	20	85	15	0	95	65	0,426	2130
Proman 0,5 L/ha A	207	30	30	85	15	0	100	60	0,244	1220
Roundup Bio 1,5 L/ha B	303	20	25	90	15	30	95	65	0,272	1360
Betanal 1 L/ha C	406	20	30	97	15	5	100	85	0,220	1100
Betanal 1 L/ha D										
Betanal 1 L/ha E										
Pixxaro EC 0,125 L/ha F										
Mean =	23	26	89	15	9	98	69	0,291	1453	
3 Centium 36 CS 0,15 L/ha A	105	15	10	50	10	0	100	70	0,270	1350
Proman 0,5 L/ha A	203	35	40	80	10	30	85	80	0,139	695
Roundup Bio 1,5 L/ha B	306	35	25	75	10	0	80	70	0,326	1630
Pixxaro EC 0,05 L/ha D	401	20	15	45	10	0	85	50	0,255	1275
Pixxaro EC 0,075 L/ha F										
Mean =	26	23	63	10	8	88	68	0,248	1238	
4 Centium 36 CS 0,15 L/ha A	110	0	10	75	15	10	100	80	0,326	1630
Proman 0,5 L/ha A	205	0	10	65	10	0	90	80	0,220	1100
Roundup Bio 1,5 L/ha B	307	0	25	80	10	0	100	70	0,237	1185
Pixxaro EC 0,05 L/ha E	408	0	25	70	15	5	95	55	0,211	1055
Pixxaro EC 0,075 L/ha G										
Mean =	0	18	73	13	4	96	71	0,249	1243	
5 Centium 36 CS 0,15 L/ha A	104	15	10	55	10	10	90	40	0,242	1210
Proman 0,5 L/ha A	209	0	10	65	20	0	80	80	0,271	1355
Roundup Bio 1,5 L/ha B	301	0	0	85	10	0	90	90	0,221	1105
Pixxaro EC 0,125 L/ha F	410	0	0	60	10	0	65	70	0,338	1690
Mean =	4	5	66	13	3	81	70	0,268	1340	
6 Centium 36 CS 0,15 L/ha A	107	40	45	40	20	0	30	40	0,404	2020
Proman 0,5 L/ha A	210	35	35	65	20	0	60	75	0,272	1360
Roundup Bio 1,5 L/ha B	302	30	35	80	20	40	70	75	0,332	1660
Goltix Gold 0,5 L/ha D	404	35	40	70	20	15	65	60	0,142	710
Goltix Gold 0,5 L/ha E										
Mean =	35	39	64	20	14	56	63	0,288	1438	
7 Centium 36 CS 0,15 L/ha A	101	0	25	45	25	20	0	50	0,268	1340
Proman 0,5 L/ha A	208	0	25	55	35	20	0	75	0,203	1015
Roundup Bio 1,5 L/ha B	304	0	25	70	30	0	80	60	0,430	2150
Goltix Gold 0,5 L/ha E	402	0	25	50	30	20	65	40	0,162	810
Goltix Gold 0,5 L/ha F										
Mean =	0	25	55	30	15	36	56	0,266	1329	

Assessed By	AHK	AHK	9-6-2023	9-6-2023	AHK	AHK	AHK	PEA	PEA					
Rating Date	22-5-2023	26-5-2023			26-6-2023	26-6-2023	26-6-2023	10-8-2023	10-8-2023					
Part Rated								SEED; C	SEED; C					
Rating Type	PHYGEN	PHYGEN	CONTRO	PHYGEN	PHYGEN	CONTRO	CONTRO	YIELD	YIELD					
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	kg; -; -	kg/ha; -; -					
Collection Basis								2 m2	1 ha					
Number of Subsamples	1	1	1	1	1	1	1	1	1					
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL					
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH					
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach					
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH					
Crop Stage Majority/Min/Max	14; 14; 14	16; 16; 16			65; 65; 65	65; 65; 65	65; 65; 65	89; 89; 89	89; 89; 89					
Pest Type			W; Weed				W; Weed							
Pest Code			BBBBB				BBBBB							
Pest Name			Broad-leaved plants				Broad-leaved plants							
Days After First/Last Applic.					60; 26	60; 26	60; 26	105; 71	105; 71					
Trt-Eval Interval	0 DA-E	0 DA-F	43; 9	43; 9	26 DA-G	26 DA-G	26 DA-G							
ARM Action Codes			9 DA-G	9 DA-G					T1					
Number of Decimals	0	0	0	0	0	0	0	3	0					
Data Entry Date	19-6-2023	19-6-2023	19-6-2023	19-6-2023	26-6-2023	26-6-2023	26-6-2023	5-1-2024	1					
Footnote Number														
Trt Treatment	Rate	Appl	Appl											
No. Name	Rate	Unit	Code	Timing	Plot									
8 Centium 36 CS	0,15	L/ha	A		106	0	40	65	40	0	85	75	0,461	2305
Proman	0,5	L/ha	A		204	0	30	80	30	0	90	80	0,460	2300
Roundup Bio	1,5	L/ha	B		310	0	35	80	40	0	80	70	0,445	2225
Pixxaro EC	0,05	L/ha	E		403	0	40	80	40	20	75	70	0,187	935
Goltix Gold	0,5	L/ha	E											
Goltix Gold	0,5	L/ha	F											
Mean =					0		36	76	38	5	83	74	0,388	1941
9 Centium 36 CS	0,15	L/ha	A		109	0	30	75	45	10	100	50	0,478	2390
Proman	0,5	L/ha	A		201	0	30	90	45	30	100	80	0,306	1530
Roundup Bio	1,5	L/ha	B		305	0	35	80	35	25	100	50	0,372	1860
Pixxaro EC	0,05	L/ha	E		407	0	40	90	40	5	95	65	0,281	1405
Goltix Gold	0,5	L/ha	E											
Goltix Gold	0,5	L/ha	F											
Pixxaro EC	0,075	L/ha	G											
Mean =					0		34	84	41	18	99	61	0,359	1796
10 Centium 36 CS	0,15	L/ha	A		108	0	30	60	35	0	100	60	0,162	810
Proman	0,5	L/ha	A		202	0	30	70	40	20	100	80	0,339	1695
Roundup Bio	1,5	L/ha	B		309	0	35	95	45	20	90	70	0,299	1495
Pixxaro EC	0,05	L/ha	E		405	0	30	95	15	5	100	70	0,225	1125
Proman	0,15	L/ha	E											
Pixxaro EC	0,075	L/ha	G											
Proman	0,15	L/ha	G											
Mean =					0		31	80	34	11	98	70	0,256	1281

Part Rated
 SEED = seed
 C = Crop is Part Rated
 Rating Type
 PHYGEN = phytotoxicity - general / injury
 CONTRO = control / burndown or knockdown
 YIELD = yield
 Rating Unit/Min/Max
 %, 0, 100 = percent
 kg, = kilogram
 kg/ha, = kilograms per hectare
 m2 = square meter
 ha = hectare
 Crop Type, Code
 C = EPP0 species (Bayer) codes
 SPQOL, BVNH, Spinacia oleracea, Spinach = US
 Crop Stage Scale
 BBCH = BBCH uniform plant stages
 Crop Stage Majority/Min/Max
 14 = 4th true leaf unfolded
 16 = 6th true leaf unfolded
 65 = Full flowering: 50% of flowers open
 89 = Fully ripe: seeds on the whole plant of typical colour and hard
 Pest Type
 W, Weed = Weed or volunteer crop
 Pest Code
 BBBBB, Broad-leaved plants, Broad-leaved plants = US
 CHEAL, Chenopodium album, common lambsquarters = US

Footnote 1: 10-08-2023; 4 meter række håndhøstet (2m2). Januar 2024 er prøven renset af Per.

20427-2 Strategi forsøg i spinat til frø

Udkast til strategiforsøg med ukrudtsbekæmpelse i spinat til frø														
	A		B	C		D		E		F		G		
	Efter såning/før fremspiring. Jordmidlerne på fugtig jord			Kimblade		1 uge senere (2 bl.)		1 uge senere (4 bl.)		4-6 dage efter E (6 bl.)		4-6 dage efter F		
1	Ubehandlet/glyphosat kontrol (parcellerne deles 50/50)													
2	Centium + Proman	0,15 + 0,5	Glyphosat hvis behov	Betanal	1,0	Betanal	1,0	Betanal (kun ved behov)	1,0	Pixxaro EC EC	0,125			
3						Pixxaro EC	0,05			Pixxaro EC	0,075			
4									Pixxaro EC	0,05			Pixxaro EC	0,075
5											Pixxaro EC EC	0,125		
6							Goltix Gold	0,5	Goltix Gold	0,5				
7									Goltix Gold	0,5	Goltix Gold	0,5		
8									Pixxaro EC + Goltix Gold	0,05 + 0,5	Goltix Gold	0,5		
9									Pixxaro EC + Goltix Gold	0,05 + 0,5	Goltix Gold	0,5	Pixxaro EC EC	0,075
10									Pixxaro EC + Proman	0,05 + 0,15			Pixxaro EC + Proman	0,075 + 0,15

Spinat strategi forsøg

Trial ID: 23427-2 Strategi Ellegaard

Cooperator Trial ID:

Protocol ID:

Location:

Trial Year: 2022

Project ID:

Study Director: Peter Hartvig

Sponsor Contact:

Investigator: Andrius Hansen Kemezys

Trt No.	Type	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	Appl Description	Appl Timing
1	CHK	Untreated Check							
2	HERB	Centium 36 CS	360	CS	0,15	L/ha	A	Efter såning på fugtig jord	
	HERB	Proman	500	SC	0,5	L/ha	A	Efter såning på fugtig jord	
	HERB	Roundup Bio	360	SC	1,5	L/ha	B	Lige inden fremspiring	
	HERB	Betanal	160	SC	1	L/ha	C	BBCH 10	
	HERB	Betanal	160	SC	1	L/ha	D	1 WA-C (BBCH 12)	
	HERB	Betanal	160	SC	1	L/ha	E	1 WA-D (BBCH 14) - Optional	
	HERB	Pixxaro EC	305	EC	0,125	L/ha	F	4-6 DAE (BBCH 16)	
3	HERB	Centium 36 CS	360	CS	0,15	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Pixxaro EC	305	EC	0,05	L/ha	D		
	HERB	Pixxaro EC	305	EC	0,075	L/ha	F		
4	HERB	Centium 36 CS	360	CS	0,15	L/ha	A	4-6 DAF	
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Pixxaro EC	305	EC	0,05	L/ha	E		
	HERB	Pixxaro EC	305	EC	0,075	L/ha	G		
5	HERB	Centium 36 CS	360	CS	0,15	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Pixxaro EC	305	EC	0,125	L/ha	F		
6	HERB	Centium 36 CS	360	CS	0,15	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Goltix Gold	700	SC	0,5	L/ha	D		
	HERB	Goltix Gold	700	SC	0,5	L/ha	E		
7	HERB	Centium 36 CS	360	CS	0,15	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Goltix Gold	700	SC	0,5	L/ha	E		
	HERB	Goltix Gold	700	SC	0,5	L/ha	F		
8	HERB	Centium 36 CS	360	CS	0,15	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Pixxaro EC	305	EC	0,05	L/ha	E		
	HERB	Goltix Gold	700	SC	0,5	L/ha	E		
	HERB	Goltix Gold	700	SC	0,5	L/ha	F		
9	HERB	Centium 36 CS	360	CS	0,15	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Pixxaro EC	305	EC	0,05	L/ha	E		
	HERB	Goltix Gold	700	SC	0,5	L/ha	E		
	HERB	Goltix Gold	700	SC	0,5	L/ha	F		
	HERB	Pixxaro EC	305	EC	0,075	L/ha	G		
10	HERB	Centium 36 CS	360	CS	0,15	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Roundup Bio	360	SC	1,5	L/ha	B		
	HERB	Pixxaro EC	305	EC	0,05	L/ha	E		
	HERB	Proman	500	SC	0,15	L/ha	E		
	HERB	Pixxaro EC	305	EC	0,075	L/ha	G		
	HERB	Proman	500	SC	0,15	L/ha	G		

Replications: 4, Untreated treatments: 1, Design: Randomized Complete Block (RCB), Treatment units: Treated 'Plot' experimental unit size, Dry Form. Unit: %, Treated 'Plot' experimental unit size Width: 4 meters, Treated 'Plot' experimental

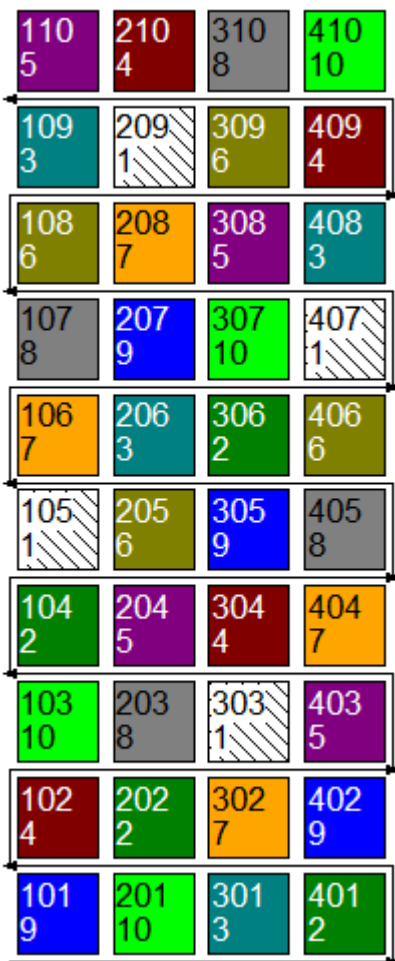
unit size Length: 6 meters, Application amount: 200 L/ha, Mix size: 1.92 L, Format definitions: G-All7.def, G-All7.frm

Trial Comments

Spinat strategi forsøg		Cooperator Trial ID:	
Trial ID: 23427-2 Strategi Ellegaard		Trial Year: 2022	
Protocol ID:	Location:		
Project ID:	Sponsor Contact:		
Study Director: Peter Hartvig			
Investigator: Andrius Hansen Kemezys			

Trial Map Treatment Description

Trt	Code	Description
1	CHK	Untreated Check
2		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Betanal 1 L/ha;Beta
3		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC 0.05 L/h
4		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC 0.05 L/h
5		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC 0.125 L/
6		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Goltix Gold 0.5 L/h
7		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Goltix Gold 0.5 L/h
8		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC 0.05 L/h
9		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC 0.05 L/h
10		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC 0.05 L/h



Spinat strategi forsøg

Trial ID: 23427-2 Strategi Ellegaard

Protocol ID:

Project ID:

Study Director: Peter Hartvig

Investigator: Andrius Hansen Kemezys

Cooperator Trial ID:
Location: Trial Year: 2022

Sponsor Contact:

General Trial Information	
Study Director: Peter Hartvig	
Investigator: Andrius Hansen Kemezys	
Discipline: H	herbicide
Status: E	established
Initiation Date: 27-4-2023	Last Possible Tour Visit: 10-8-2023
Trial Location	
City: Dalmose	Country: DNK Denmark
	County: Øllemosevej 10
Postal Code: 4261	Climate Zone: EPOMAR Eppo Maritime
Latitude of LL Corner °: 55,2999299N	
Longitude of LL Corner °: 11,37542 E	

Conclusions:**Konklusion 23427-2 Strategi i spinat.**

Forsøget blev udført ved Høve (Slagelse), Sjælland, i nærheden af forskningscentret AU Flakkebjerg. Forsøget har til formål at undersøge effektivitet og selektivitet af forskellige ukrudtsstrategier i spinat til frø i et scenarie, hvor phenmedipham ikke længere er tilladt. I forsøget indgik 10 led, led 1 ubehandlet og led 2-10 strategier med forskellige midler, behandlings-tidspunkter og doser.

Forsøget er behandlet 7 gange, A lige efter såning 27. april, B før fremspiring 1. maj, C afgrøden med kimblade 8. maj, D en uge senere 15. maj BBCH12, E igen en uge senere 22. maj BBCH 14. Behandling F 26. majer i stadie BBCH 16 4-6 dage efter E og behandling G 31. maj igen 4-6 dage efter F.

Alle led (undtaget ubehandlet) er behandlet med behandling A; Centium og Proman lige efter såning og behandling B, glyphosat før fremspiring. Led 2 er referencebehandling behandlet med Betanal 3 gange C, D og E samt i F med Pixxaro EC. Led 3 er behandlet 2 gange med Pixxaro EC i D og F. Led 4 ens med led 3 dog er Pixxaro EC anvendt i E og G. I led 5 er der kun anvendt Pixxaro EC 1 gang i F. Led 6 Goltix Gold i D og E, led 7 samme behandling med Goltix Gold i E og F. I led 8 er der anvendt Pixxaro EC+ Goltix Gold i E samt Goltix Gold i F, led 9 samme strategi som led 8 + Pixxaro EC i G. Led 10 her er strategien Pixxaro EC + Proman i E og G.

Forsøget blev bedømt 4 gange for skade igennem vækstsæsonen, hhv. d. 22. maj ved behandling E, 26. maj ved behandling F, 2. juni 7 DA. E. F og 14. juni 14 dage efter G behandlingen. Effekten på ukrudt er bedømt 2 gange hhv. d. 2. juni og 14. juni, der var en stor bestand af 2-kimbladet ukrudt på arealet. Ved bedømmelsen 14. juni var bestanden af POLCO 10 planter/m², VIOAR 8 planter/m², STEME 8 planter/m², VERAR 8 planter/m² og andet 2-kimbladet BBBB 8 planter/m².

Resultatet fra effektbedømmelsen medio juni 14 DA.E.G viser, at ingen af strategierne har en effekt overfor de tilstedeværende ukrudts arter som er acceptabel. Overfor POLCO er effekten ikke acceptabel 22-75%, signifikant lavest i led 6 22%, på VIOAR er effekten ligeledes ikke acceptabel 22-70% effekt. På VIOAR er effekten signifikant bedst i led 2 og 10 92-95% effekt, i de andre behandlet led er effekten ikke acceptabel 61-75% effekt, der er ingen signifikant forskel i disse led. På STEME er led 2 reference leddet og led 10 signifikant bedre en de andre strategier, 92-95% effekt. På VERAR er effekten i alle led meget dårlig 25-54% effekt, ingen signifikant forskel, på BBBB er effekten signifikant dårligst i led 6 og 7 20-22% effekt, i de andre behandlet led er effekten også meget dårlig 45-71% effekt.

Skadebedømmelserne ultimo maj ved F behandlingen, viser at de fleste behandlinger giver moderate til kraftige skader 20-40% i led 3 og 5 er der signifikant næsten ingen skade på afgrøden. Ved bedømmelsen primo juni 7 DA.E.F er der signifikant størst skader i led 8 og 9 med 51% skade, i led 3, 4 og 5 er skaden signifikant lavest 29-35%, i de andre led 2, 6 og 10 ligger skaden ligeledes højt 34-35%. Ved bedømmelsen medio juni 14 DA.E.G er skaden noget aftaget, signifikant højest i led 7, 8, 9, og 10 med 30-36% skade. I led 2, 3 og 4 er der næsten ingen skaden 2-7% skade, i led 5 og 6 er skaden 10-15%, der er dog ingen signifikant forskel mellem disse led.

Udbyttet i ubehandlet var 898 kg/ha, hvilket er noget lavt, hvilket sikkert skyldes det stort ukrudtstryk. I led 2 var der det højeste udbytte med 2515 kg/ha, i alle de andre led er udbyttet lavere end i led 2 men noget højere end ubehandlet, der er dog ingen signifikant forskel mellem de behandlet led.

Ud fra dette forsøg er det svært at pege på en strategi, som giver lave skader på afgrøden og god effekt på ukrudt samt et højt udbyttet. Men i led 5 som er behandlet med Centium 36 CS + Proman på tidspunkt A og Roundup Bio lige før fremspiring B samt med Pixxaro EC på behandlingstidspunkt F, i dette led er der lave skade bedømmelser selv om effekten på ukrudt ikke er tilstrækkelig, så er udbyttet acceptabelt 2046 kg/ha. Led 2 som giver det højeste udbytte, er skade bedømmelserne ved de 3 første bedømmelser høje, og ved den sidste bedømmelse er der næsten ingen skade, her er effekten på ukrudt heller ikke acceptabel.

Contacts
Role: STYDIR study director
Study Director: Peter Hartvig
Organization: Department of Agroecology
Address 1: Forsøgsvej 1 **Phone No.:** +4587158203 **Mobile No.:** +4522283301
Country: DNK Denmark
City: 4200 Slagelse
Role: INVEST investigator
Investigator: Andrius Hansen Kemezys

Crop Description
Crop 1: C SPQOL Spinacia oleracea Spinach **BBCH Scale:** BVNH
Stage Scale: BBCH
Planting Date: 22-4-2023
Harvest Date: 10-8-2023 **Harvest Equipment:** By Hand
Harvested Width: 0,5 m
Harvested Length: 4 m

Pest Description
Pest 1 Type: W **Code:** POLCO Fallopia convolvulus
Common Name: wild buckwheat **Stage Scale:** BBCH
Pest 2 Type: W **Code:** VIOAR Viola arvensis
Common Name: Field pansy **Stage Scale:** BBCH
Pest 3 Type: W **Code:** STEME Stellaria media
Common Name: chickweed **Stage Scale:** BBCH
Pest 4 Type: W **Code:** VERAR Veronica arvensis
Common Name: Wall speedwell **Stage Scale:** BBCH
Pest 5 Type: W **Code:** BBBBB Broad-leaved plants
Common Name: Broad-leaved plants **Stage Scale:** BBCH

Site and Design
Treated Plot Width: 4 m
Treated Plot Length: 6 m
Treated Plot Area: 24,0 m²
Replications: 4 **Treatments:** 10 **Plots:** 40 **Study Design:** RACOBL Randomized Complete Block (RCB)

Application Description

	A	B	C	D	E	F
Date	27-4-2023		8-5-2023	16-5-2023	22-5-2023	26-5-2023
Start Time	15:20		10:00	8:10	13:00	8:30
Stop Time	16:00		10:20	8:25	13:40	9:10
Method	SPRAY		SPRAY	SPRAY	SPRAY	SPRAY
Placement	BANFOL		BANFOL	BANFOL	BANFOL	BANFOL
Applied By	AHK		AHK	VLI	VLI	AHK
Air Temperature Start, Stop	-; 9 C		-; 14 C	-; 9,9 C	-; 22,5 C	-; 11,9 C
% Relative Humidity Start, Stop	-; 38,6		-; 34,5	-; 79	-; 30	-; 60
Wind Velocity+Dir. Start	3,5 MPS; W		6 MPS; S	3,1 MPS; W	3,9 MPS; E	6 MPS; NW
Wet Leaves (Y/N)	N; no		N; no	N; no	N; no	N; no
Soil Temperature	10,3 C		10 C	13,1 C	20,6 C	13,2 C
Soil Moisture	DRY		DRY	SLIWET	DRY	DRY
% Cloud Cover	25		10	100	5	90

	G
Date	31-5-2023
Start Time	15:00
Stop Time	15:20
Method	SPRAY
Placement	BANFOL
Applied By	AHK
Air Temperature Start, Stop	-; 23,3 C
% Relative Humidity Start, Stop	-; 32
Wind Velocity+Dir. Start	3,6 MPS; NW
Wet Leaves (Y/N)	N; no
Soil Temperature	19,6 C
Soil Moisture	DRY
% Cloud Cover	80

Comment:

Application B was not carried out.

Crop Stage At Each Application

	A	B	C	D	E
Crop 1 Code, BBCH Scale	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH
Stage Scale Used	BBCH	BBCH	BBCH	BBCH	BBCH
Stage Majority, Percent	05; -		10; -	12; -	14; -
Height Average					
Coverage					

	F	G
Crop 1 Code, BBCH Scale	SPQOL; BVNH	SPQOL; BVNH
Stage Scale Used	BBCH	BBCH
Stage Majority, Percent	16; -	18; -
Height Average	7 cm	8 cm
Coverage	8 %	10 %

Pest Stage At Each Application				
	A	B	C	D
Pest 1 Code, Type, Scale	POLCO; W; BBCH	POLCO; W; BBCH	POLCO; W; BBCH	POLCO; W; BBCH
Stage Majority, Percent				
Density Average				
Coverage				
Pest 2 Code, Type, Scale	VIOAR; W; BBCH	VIOAR; W; BBCH	VIOAR; W; BBCH	VIOAR; W; BBCH
Stage Majority, Percent				
Density Average				
Coverage				
Pest 3 Code, Type, Scale	STEME; W; BBCH	STEME; W; BBCH	STEME; W; BBCH	STEME; W; BBCH
Stage Majority, Percent				
Density Average				
Coverage				
Pest 4 Code, Type, Scale	VERAR; W; BBCH	VERAR; W; BBCH	VERAR; W; BBCH	VERAR; W; BBCH
Stage Majority, Percent				
Density Average				
Coverage				
Pest 5 Code, Type, Scale	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH
Density Average			9,75 PLA/m2	
Coverage			1 %	

	E	F	G
Pest 1 Code, Type, Scale	POLCO; W; BBCH	POLCO; W; BBCH	POLCO; W; BBCH
Stage Majority, Percent	11; -	13; -	
Density Average	12,25 PLA/m2	15 PLA/m2	
Coverage	4 %	8 %	
Pest 2 Code, Type, Scale	VIOAR; W; BBCH	VIOAR; W; BBCH	VIOAR; W; BBCH
Stage Majority, Percent	12; -	14; -	
Density Average	9,5 PLA/m2	12,5 PLA/m2	
Coverage	3 %	4 %	
Pest 3 Code, Type, Scale	STEME; W; BBCH	STEME; W; BBCH	STEME; W; BBCH
Stage Majority, Percent	31; -	32; -	
Density Average	6,5 PLA/m2	7 PLA/m2	
Coverage	2 %	3 %	
Pest 4 Code, Type, Scale	VERAR; W; BBCH	VERAR; W; BBCH	VERAR; W; BBCH
Stage Majority, Percent		12-14; -	
Density Average		6 PLA/m2	
Coverage		4 %	
Pest 5 Code, Type, Scale	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH
Density Average	10,52 PLA/m2	6,25 PLA/m2	
Coverage	3 %	3 %	

Application Equipment							
	A	B	C	D	E	F	G
Equipment Name	Selvkørende		Selvkørende	Verners spra	Selvkørende	Selvkørende	Selvkørende
Equipment Type	SPRAYE		SPRAYE	SPRAY	SPRAYE	SPRAYE	SPRAYE
Operation Pressure	3.7 BAR		3,7 BAR	2,7 BAR	3,7 BAR	3,7 BAR	3,7 BAR
Nozzle Model	LD015-110		LD015-110	LD015-110	LD015-110	LD015-110	LD015-110
Nozzle Type	Hardi		Hardi	Hardi	Hardi	Hardi	Hardi
Nozzle Spacing	50 cm		50,0 cm	50,0 cm	50,0 cm	50,0 cm	50,0 cm
Nozzles/Row	5		5,0	5,0	5,0	5,0	5,0
Band Width	50 0		50,0 0	50,0 0	50,0 0	50,0 0	50,0 0
Boom Length	2.5 m		2,5 m	2,5 m	2,5 m	2,5 m	2,5 m
Boom Height	50 cm		50,0 cm	50 cm	50,0 cm	45,0 cm	50,0 cm
Ground Speed	3.6 KPH		3,6 KPH	3,4 KPH	3,6 KPH	3,6 KPH	3,6 KPH
Application Amount	200 WATER		200 WATER	200 L/ha	200 WATER	200 WATER	200 WATER
Mix Size	3 liters		3,0 liters	3,0 liters	3,0 liters	3,0 liters	3,0 liters

Notes			
Context	Date	By	Notes
STATUS	31-3-2023	Andrius Han	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
	2-6-2023	Dorian Vign	Automatically added by ARM: Status changed to: E: changed by (XDAVID) .
	2-6-2023	Dorian Vign	Automatically added by ARM: Trial Status updated to 'E' when Rating Date entered.

Spinat strategi forsøg

Trial ID: 23427-2 Strategi Ellegaard

Cooperator Trial ID:

Protocol ID:

Location:

Trial Year: 2022

Project ID:

Study Director: Peter Hartvig

Sponsor Contact:

Investigator: Andrius Hansen Kemezys

Assessed By					
Rating Date	22-5-2023	26-5-2023	2-6-2023	2-6-2023	2-6-2023
Part Rated					
Rating Type	PHYGEN	PHYGEN	PHYGEN	CONTRO	CONTRO
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100
Collection Basis					
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach
Pest Type				W; Weed	W; Weed
Pest Code				POLCO	VERAR
Pest Scientific Name				Fallopia convolvulus	Veronica arvensis
Pest Name				wild buckwheat	Wall speedwell
Pest Stage Majority/Min/Max				-; -; 32	-; -; 31
Pest Density				7,6 PLA/m2	9 PLA/m2
Days After First/Last Applic.				-; 2	-; 2
Trt-Eval Interval	0 DA-E	0 DA-F	7 DA-F	7 DA-F	7 DA-F
Number of Decimals	0	0	0	0	0
Trt No.	Treatment Name	Rate	Appl Unit	Appl Code	Appl Timing
1	Untreated Check	0			0
2	Centium 36 CS	0,15 L/ha	A		20 b
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Betanal	1 L/ha	C		
	Betanal	1 L/ha	D		
	Betanal	1 L/ha	E		
	Pixxaro EC	0,125 L/ha	F		
3	Centium 36 CS	0,15 L/ha	A		3 c
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Pixxaro EC	0,05 L/ha	D		
	Pixxaro EC	0,075 L/ha	F		
4	Centium 36 CS	0,15 L/ha	A		0 c
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Pixxaro EC	0,05 L/ha	E		
	Pixxaro EC	0,075 L/ha	G		
5	Centium 36 CS	0,15 L/ha	A		0 c
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Pixxaro EC	0,125 L/ha	F		
6	Centium 36 CS	0,15 L/ha	A		39 a
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Goltix Gold	0,5 L/ha	D		
	Goltix Gold	0,5 L/ha	E		
7	Centium 36 CS	0,15 L/ha	A		8 c
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Goltix Gold	0,5 L/ha	E		
	Goltix Gold	0,5 L/ha	F		
8	Centium 36 CS	0,15 L/ha	A		0 c
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Pixxaro EC	0,05 L/ha	E		
	Goltix Gold	0,5 L/ha	E		
	Goltix Gold	0,5 L/ha	F		
9	Centium 36 CS	0,15 L/ha	A		0 c
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Pixxaro EC	0,05 L/ha	E		
	Goltix Gold	0,5 L/ha	E		
	Goltix Gold	0,5 L/ha	F		
	Pixxaro EC	0,075 L/ha	G		

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Untreated treatment(s) 1 excluded from analysis.

^Calculated from residual.

Assessed By					
Rating Date	22-5-2023	26-5-2023	2-6-2023	2-6-2023	2-6-2023
Part Rated					
Rating Type	PHYGEN	PHYGEN	PHYGEN	CONTRO	CONTRO
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100
Collection Basis					
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach
Pest Type				W; Weed	W; Weed
Pest Code				POLCO	VERAR
Pest Scientific Name				Fallopia convolvulus	Veronica arvensis
Pest Name				wild buckwheat	Wall speedwell
Pest Stage Majority/Min/Max				-; -; 32	-; -; 31
Pest Density				7,6 PLA/m2	9 PLA/m2
Days After First/Last Applic.	-; 6	-; 4	-; 2	-; 2	-; 2
Trt-Eval Interval	0 DA-E	0 DA-F	7 DA-F	7 DA-F	7 DA-F
Number of Decimals	0	0	0	0	0
Trt No.					
Treatment Name					
Rate					
Appl Unit					
Appl Code					
Appl Timing					
10 Centium 36 CS	0,15 L/ha A				
Proman	0,5 L/ha A				
Roundup Bio	1,5 L/ha B				
Pixxaro EC	0,05 L/ha E				
Proman	0,15 L/ha E				
Pixxaro EC	0,075 L/ha G				
Proman	0,15 L/ha G				
LSD P=.05	11,6	6,1	3,6	12,4	14,8
CV	96,83	16,4	6,56	13,04	16,03
Shapiro-Wilk^	0,8675*	0,8486*	0,9715	0,9791	0,9664
P(Shapiro-Wilk)^	0,0005*	0,0002*	0,4669	0,7155	0,3356
Replicate F	0,570	0,485	13,625	4,684	1,564
Replicate Prob(F)	0,6403	0,6960	0,0001	0,0103	0,2241
Treatment F	10,996	52,071	55,214	13,141	3,349
Treatment Prob(F)	0,0001	0,0001	0,0001	0,0001	0,0102

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Untreated treatment(s) 1 excluded from analysis.

^Calculated from residual.

Assessed By					
Rating Date	2-6-2023	2-6-2023	2-6-2023	14-6-2023	14-6-2023
Part Rated					
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100
Collection Basis					
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach
Pest Type	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed
Pest Code	VIOAR	STEME	BBBBB	POLCO	VIOAR
Pest Scientific Name	Viola arvensis	Stellaria media	Broad-leaved plants	Fallopia convolvulus	Viola arvensis
Pest Name	Field pansy	chickweed	Broad-leaved plants	wild buckwheat	Field pansy
Pest Stage Majority/Min/Max	-; -; 18	-; -; 33		-; -; 65	-; -; 61
Pest Density	10,5 PLA/m2	10,5 PLA/m2	8 PLA/m2	10,25 PLA/m2	8 PLA/m2
Days After First/Last Applic.	-; 2	-; 2	-; 2	-; 14	-; 14
Trt-Eval Interval	7 DA-F	7 DA-F	7 DA-F	14 DA-G	14 DA-G
Number of Decimals	0	0	0	0	0
Trt No.	Treatment Name	Rate	Appl Unit	Appl Code	Appl Timing
1	Untreated Check	0			
2	Centium 36 CS	0,15 L/ha	A		
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Betanal	1 L/ha	C		
	Betanal	1 L/ha	D		
	Betanal	1 L/ha	E		
	Pixxaro EC	0,125 L/ha	F		
3	Centium 36 CS	0,15 L/ha	A		
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Pixxaro EC	0,05 L/ha	D		
	Pixxaro EC	0,075 L/ha	F		
4	Centium 36 CS	0,15 L/ha	A		
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Pixxaro EC	0,05 L/ha	E		
	Pixxaro EC	0,075 L/ha	G		
5	Centium 36 CS	0,15 L/ha	A		
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Pixxaro EC	0,125 L/ha	F		
6	Centium 36 CS	0,15 L/ha	A		
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Goltix Gold	0,5 L/ha	D		
	Goltix Gold	0,5 L/ha	E		
7	Centium 36 CS	0,15 L/ha	A		
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Goltix Gold	0,5 L/ha	E		
	Goltix Gold	0,5 L/ha	F		
8	Centium 36 CS	0,15 L/ha	A		
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Pixxaro EC	0,05 L/ha	E		
	Goltix Gold	0,5 L/ha	E		
	Goltix Gold	0,5 L/ha	F		
9	Centium 36 CS	0,15 L/ha	A		
	Proman	0,5 L/ha	A		
	Roundup Bio	1,5 L/ha	B		
	Pixxaro EC	0,05 L/ha	E		
	Goltix Gold	0,5 L/ha	E		
	Goltix Gold	0,5 L/ha	F		
	Pixxaro EC	0,075 L/ha	G		

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Untreated treatment(s) 1 excluded from analysis.

^Calculated from residual.

Assessed By					
Rating Date	2-6-2023	2-6-2023	2-6-2023	14-6-2023	14-6-2023
Part Rated					
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100
Collection Basis					
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach
Pest Type	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed
Pest Code	VIOAR	STEME	BBBBB	POLCO	VIOAR
Pest Scientific Name	Viola arvensis	Stellaria media	Broad-leaved plants	Fallopia convolvulus	Viola arvensis
Pest Name	Field pansy	chickweed	Broad-leaved plants	wild buckwheat	Field pansy
Pest Stage Majority/Min/Max	-; -; 18	-; -; 33		-; -; 65	-; -; 61
Pest Density	10,5 PLA/m2	10,5 PLA/m2	8 PLA/m2	10,25 PLA/m2	8 PLA/m2
Days After First/Last Applic.	-; 2	-; 2	-; 2	-; 14	-; 14
Trt-Eval Interval	7 DA-F	7 DA-F	7 DA-F	14 DA-G	14 DA-G
Number of Decimals	0	0	0	0	0
Trt Treatment No. Name	Rate	Appl Unit	Appl Code		
10 Centium 36 CS	0,15 L/ha	A			
Proman	0,5 L/ha	A			
Roundup Bio	1,5 L/ha	B			
Pixxaro EC	0,05 L/ha	E			
Proman	0,15 L/ha	E			
Pixxaro EC	0,075 L/ha	G			
Proman	0,15 L/ha	G			
LSD P=.05	12,3			10,3	18,9
CV	13,17			10,35	27,23
Shapiro-Wilk^	0,9663	0,9885	0,9774	0,9644	0,9603
P(Shapiro-Wilk)^	0,3342	0,9661	0,6571	0,2924	0,2202
Replicate F	2,847	1,597	15,958	3,368	0,455
Replicate Prob(F)	0,0588	0,2162	0,0001	0,0351	0,7160
Treatment F	5,985	5,317	8,596	11,096	5,649
Treatment Prob(F)	0,0003	0,0007	0,0001	0,0001	0,0004

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Untreated treatment(s) 1 excluded from analysis.

^Calculated from residual.

Assessed By					
Rating Date	14-6-2023	14-6-2023	14-6-2023	14-6-2023	
Part Rated					
Rating Type	CONTRO	CONTRO	CONTRO	PHYGEN	
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	
Collection Basis					
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	
BBCH Scale	BVNH	BVNH	BVNH	BVNH	
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	
Crop Name	Spinach	Spinach	Spinach	Spinach	
Pest Type	W; Weed	W; Weed	W; Weed		
Pest Code	STEME	VERAR	BBBBB		
Pest Scientific Name	Stellaria media	Veronica arvensis	Broad-leaved plants		
Pest Name	chickweed	Wall speedwell	Broad-leaved plants		
Pest Stage Majority/Min/Max	-; -; 33	-; -; 63			
Pest Density	7,75 PLA/m2	8,5 PLA/m2	8 PLA/m2		
Days After First/Last Applic.	-; 14	-; 14	-; 14	-; 14	
Trt-Eval Interval	14 DA-G	14 DA-G	14 DA-G	14 DA-G	
Number of Decimals	0	0	0	0	
Trt No.	Treatment Name	Rate	Appl Unit	Appl Code	Timing
1	Untreated Check				0
2	Centium 36 CS	0,15 L/ha	A		95 a
	Proman	0,5 L/ha	A		54 -
	Roundup Bio	1,5 L/ha	B		64 a
	Betanal	1 L/ha	C		
	Betanal	1 L/ha	D		
	Betanal	1 L/ha	E		
	Pixxaro EC	0,125 L/ha	F		4 b
3	Centium 36 CS	0,15 L/ha	A		75 b
	Proman	0,5 L/ha	A		45 -
	Roundup Bio	1,5 L/ha	B		45 a
	Pixxaro EC	0,05 L/ha	D		
	Pixxaro EC	0,075 L/ha	F		3 b
4	Centium 36 CS	0,15 L/ha	A		68 b
	Proman	0,5 L/ha	A		35 -
	Roundup Bio	1,5 L/ha	B		50 a
	Pixxaro EC	0,05 L/ha	E		
	Pixxaro EC	0,075 L/ha	G		8 b
5	Centium 36 CS	0,15 L/ha	A		73 b
	Proman	0,5 L/ha	A		51 -
	Roundup Bio	1,5 L/ha	B		48 a
	Pixxaro EC	0,125 L/ha	F		10 b
6	Centium 36 CS	0,15 L/ha	A		61 b
	Proman	0,5 L/ha	A		30 -
	Roundup Bio	1,5 L/ha	B		20 b
	Goltix Gold	0,5 L/ha	D		
	Goltix Gold	0,5 L/ha	E		15 b
7	Centium 36 CS	0,15 L/ha	A		69 b
	Proman	0,5 L/ha	A		35 -
	Roundup Bio	1,5 L/ha	B		23 b
	Goltix Gold	0,5 L/ha	E		
	Goltix Gold	0,5 L/ha	F		30 a
8	Centium 36 CS	0,15 L/ha	A		70 b
	Proman	0,5 L/ha	A		25 -
	Roundup Bio	1,5 L/ha	B		56 a
	Pixxaro EC	0,05 L/ha	E		
	Goltix Gold	0,5 L/ha	E		
	Goltix Gold	0,5 L/ha	F		33 a
9	Centium 36 CS	0,15 L/ha	A		68 b
	Proman	0,5 L/ha	A		30 -
	Roundup Bio	1,5 L/ha	B		60 a
	Pixxaro EC	0,05 L/ha	E		
	Goltix Gold	0,5 L/ha	E		
	Goltix Gold	0,5 L/ha	F		35 a
	Pixxaro EC	0,075 L/ha	G		

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Untreated treatment(s) 1 excluded from analysis.

^Calculated from residual.

Assessed By						
Rating Date	14-6-2023	14-6-2023	14-6-2023	14-6-2023		
Part Rated						
Rating Type	CONTRO	CONTRO	CONTRO	PHYGEN		
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100		
Collection Basis						
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL		
BBCH Scale	BVNH	BVNH	BVNH	BVNH		
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea		
Crop Name	Spinach	Spinach	Spinach	Spinach		
Pest Type	W; Weed	W; Weed	W; Weed			
Pest Code	STEME	VERAR	BBBBB			
Pest Scientific Name	Stellaria media	Veronica arvensis	Broad-leaved plants			
Pest Name	chickweed	Wall speedwell	Broad-leaved plants			
Pest Stage Majority/Min/Max	-; -; 33	-; -; 63				
Pest Density	7,75 PLA/m2	8,5 PLA/m2	8 PLA/m2			
Days After First/Last Applic.	-; 14	-; 14	-; 14	-; 14		
Trt-Eval Interval	14 DA-G	14 DA-G	14 DA-G	14 DA-G		
Number of Decimals	0	0	0	0		
Trt No.						
Treatment Name						
Rate						
Appl Unit						
Appl Code						
Appl Timing						
10	Centium 36 CS Proman Roundup Bio Pixxaro EC Proman Pixxaro EC Proman	0,15 L/ha A 0,5 L/ha A 1,5 L/ha B 0,05 L/ha E 0,15 L/ha E 0,075 L/ha G 0,15 L/ha G	93 a	38 -	71 a	36 a
LSD P=.05	15,5	24,8	20,5	10,4		
CV	14,24	44,57	28,99	37,21		
Shapiro-Wilk^	0,9823	0,9458	0,9742	0,9628		
P(Shapiro-Wilk)^	0,8196	0,0771	0,552	0,2627		
Replicate F	1,005	1,226	0,707	2,567		
Replicate Prob(F)	0,4078	0,3218	0,5572	0,0782		
Treatment F	4,782	1,369	6,196	15,635		
Treatment Prob(F)	0,0013	0,2593	0,0002	0,0001		

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
 Untreated treatment(s) 1 excluded from analysis.
 ^Calculated from residual.

Spinat strategi forsøg

Trial ID: 23427-2 Strategi Ellegaard

Cooperator Trial ID:

Protocol ID:

Location:

Trial Year: 2022

Project ID:

Study Director: Peter Hartvig

Sponsor Contact:

Investigator: Andrius Hansen Kemezyz

Rating Type

PHYGEN = phytotoxicity - general / injury

CONTRO = control / burndown or knockdown

Rating Unit/Min/Max

%, 0, 100 = percent

Crop Type, Code

C = EPPO species (Bayer) codes

SPQOL, BVNH, Spinacia oleracea, Spinach = US

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

POLCO, Fallopia convolvulus, wild buckwheat = US

VERAR, Veronica arvensis, Wall speedwell = US

VIOAR, Viola arvensis, Field pansy = US

STEME, Stellaria media, chickweed = US

BBBBB, Broad-leaved plants, Broad-leaved plants = US

32 = 2 visibly extended internode; G=2 node stage

31 = 1 visibly extended internode; G=1 node stage

18 = 8 true leaves, leaf pairs or whorls unfolded

33 = 3 visibly extended internode; G=3 node stage

65 = Full flowering: 50% of flowers open, first petals may be fallen

61 = Beginning of flowering: 10% of flowers open

63 = 30% of flowers open

PLA/m2 = plants per square meter

Spinat strategi forsøg

Trial ID: 23427-2 Strategi Ellegaard

Cooperator Trial ID:

Protocol ID:

Location:

Trial Year: 2022

Project ID:

Study Director: Peter Hartvig

Sponsor Contact:

Investigator: Andrius Hansen Kemezs

Assessed By		PEA	PEA				
Rating Date		10-8-2023	10-8-2023				
Part Rated		SEED; C	SEED; C				
Rating Type		YIELD	YIELD				
Rating Unit/Min/Max		kg; -; -	kg/ha; -; -				
Collection Basis		2 m2	1 ha				
Crop Type, Code		C; SPQOL	C; SPQOL				
BBCH Scale		BVNH	BVNH				
Crop Scientific Name		Spinacia oleracea	Spinacia oleracea				
Crop Name		Spinach	Spinach				
Pest Type							
Pest Code							
Pest Scientific Name							
Pest Name							
Pest Stage Majority/Min/Max							
Pest Density							
Days After First/Last Applic.		-; 71	-; 71				
Trt-Eval Interval							
Number of Decimals		3	0				
Trt No.	Treatment Name	Rate	Appl Unit	Appl Code	Timing		
1	Untreated Check					0,180 b	898 b
2	Centium 36 CS	0,15 L/ha	A			0,503 a	2515 a
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Betanal	1 L/ha	C				
	Betanal	1 L/ha	D				
	Betanal	1 L/ha	E				
	Pixxaro EC	0,125 L/ha	F				
3	Centium 36 CS	0,15 L/ha	A			0,269 ab	1345 ab
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Pixxaro EC	0,05 L/ha	D				
	Pixxaro EC	0,075 L/ha	F				
4	Centium 36 CS	0,15 L/ha	A			0,233 ab	1165 ab
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Pixxaro EC	0,05 L/ha	E				
	Pixxaro EC	0,075 L/ha	G				
5	Centium 36 CS	0,15 L/ha	A			0,409 ab	2046 ab
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Pixxaro EC	0,125 L/ha	F				
6	Centium 36 CS	0,15 L/ha	A			0,348 ab	1741 ab
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Goltix Gold	0,5 L/ha	D				
	Goltix Gold	0,5 L/ha	E				
7	Centium 36 CS	0,15 L/ha	A			0,397 ab	1984 ab
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Goltix Gold	0,5 L/ha	E				
	Goltix Gold	0,5 L/ha	F				
8	Centium 36 CS	0,15 L/ha	A			0,450 ab	2248 ab
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Pixxaro EC	0,05 L/ha	E				
	Goltix Gold	0,5 L/ha	E				
	Goltix Gold	0,5 L/ha	F				
9	Centium 36 CS	0,15 L/ha	A			0,473 ab	2365 ab
	Proman	0,5 L/ha	A				
	Roundup Bio	1,5 L/ha	B				
	Pixxaro EC	0,05 L/ha	E				
	Goltix Gold	0,5 L/ha	E				
	Goltix Gold	0,5 L/ha	F				
	Pixxaro EC	0,075 L/ha	G				

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

^Calculated from residual.

Assessed By		PEA	PEA
Rating Date		10-8-2023	10-8-2023
Part Rated		SEED; C	SEED; C
Rating Type		YIELD	YIELD
Rating Unit/Min/Max		kg; -; -	kg/ha; -; -
Collection Basis		2 m2	1 ha
Crop Type, Code		C; SPQOL	C; SPQOL
BBCH Scale		BVNH	BVNH
Crop Scientific Name		Spinacia oleracea	Spinacia oleracea
Crop Name		Spinach	Spinach
Pest Type			
Pest Code			
Pest Scientific Name			
Pest Name			
Pest Stage Majority/Min/Max			
Pest Density			
Days After First/Last Applic.		-; 71	-; 71
Trt-Eval Interval			
Number of Decimals		3	0
Trt No.	Treatment Name	Rate	Appl Unit Code Timing
10	Centium 36 CS	0,15 L/ha	A 0,412 ab
	Proman	0,5 L/ha	A 2059 ab
	Roundup Bio	1,5 L/ha	B
	Pixxaro EC	0,05 L/ha	E
	Proman	0,15 L/ha	E
	Pixxaro EC	0,075 L/ha	G
	Proman	0,15 L/ha	G
LSD P=.05			0,1893
CV			35,51
Shapiro-Wilk^			0,9792
P(Shapiro-Wilk)^			0,6583
Replicate F			2,078
Replicate Prob(F)			0,1266
Treatment F			2,724
Treatment Prob(F)			0,0212

Part Rated

SEED = seed

C = Crop is Part Rated

Rating Type

YIELD = yield

Rating Unit/Min/Max

kg, , = kilogram

kg/ha, , = kilograms per hectare

m2 = square meter

ha = hectare

Crop Type, Code

C = EPPO species (Bayer) codes

SPQOL, BVNH, Spinacia oleracea, Spinach = US

Spinat strategi forsøg
 Trial ID: 23427-2 Strategi Ellegaard
 Protocol ID: Location: Cooperator Trial ID:
 Project ID: Trial Year: 2022
 Study Director: Peter Hartvig
 Investigator: Andrius Hansen Kemezys Sponsor Contact:

Assessed By	22-5-2023	26-5-2023	2-6-2023	2-6-2023	2-6-2023	2-6-2023	2-6-2023	2-6-2023	2-6-2023	14-6-2023	14-6-2023	14-6-2023	14-6-2023	14-6-2023	14-6-2023	PEA 10-8-2023 SEED: C YIELD kg/ha; -; - 2 m ²	PEA 10-8-2023 SEED: C YIELD kg/ha; -; - 1 ha
Rating Date																	
Part Rated																	
Rating Type	PHYGEN	PHYGEN	PHYGEN	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN		
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100		
Collection Basis																	
Number of Subsamples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach
Pest Type				W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed
Pest Code				POLCO	VERAR	VIOAR	STEME	BBBBB	POLCO	POLCO	POLCO	STEME	VERAR	BBBBB	BBBBB	BBBBB	BBBBB
Pest Name				wild buckwheat	Wall speedwell	Field pansy	chickweed	Broad-leaved plants	wild buckwheat	Field pansy	chickweed	Wall speedwell	Broad-leaved plants	Wall speedwell	Broad-leaved plants		
Days After First/Last Applic.	-; 6	-; 4	-; 2	-; 2	-; 2	-; 2	-; 2	-; 2	-; 14	-; 14	-; 14	-; 14	-; 14	-; 14	-; 14	-; 71	-; 71
Tri-Eval Interval	0 DA-E	0 DA-F	7 DA-F	7 DA-F	7 DA-F	7 DA-F	7 DA-F	7 DA-F	7 DA-F	14 DA-G	14 DA-G	14 DA-G	14 DA-G	14 DA-G	14 DA-G		
ARM Action Codes																	
Number of Decimals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
Footnote Number																1	1
Trt Treatment																	
Rate Appl Appl																	
No. Name																	
Rate Unit Code Timing Plot																	
1 Untreated Check	105 209 303 407 Mean =	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0,164 0,136 0,275 0,143 0,180	820 680 1375 715 898
2 Centium 36 CS 0,15 L/ha A Proman 0,5 L/ha A Roundup Bio 1,5 L/ha B Betanal 1 L/ha C Betanal 1 L/ha D Betanal 1 L/ha E Pixxaro EC 0,125 L/ha F Mean =	104 202 306 401 Mean =	30 0 25 25 20	40 25 35 30 33	35 70 80 35 78	80 70 80 80 75	75 70 80 75 83	85 80 75 95 95	95 95 95 95 81	70 85 80 90 70	75 65 75 65 68	65 60 75 70 68	100 85 100 95 95	60 55 60 40 54	60 65 65 65 64	15 0 0 0 4	0,616 0,571 0,434 0,391 0,503	3080 2855 2170 1955 2515
3 Centium 36 CS 0,15 L/ha A Proman 0,5 L/ha A Roundup Bio 1,5 L/ha B Pixxaro EC 0,05 L/ha D Pixxaro EC 0,075 L/ha F Mean =	109 206 301 408 Mean =	0 10 0 0 3	0 10 0 0 3	30 35 25 25 29	45 70 65 55 59	50 50 50 30 45	40 55 70 40 51	65 80 85 80 78	60 65 70 70 65	70 65 50 65 68	60 60 50 50 53	70 80 80 70 75	60 50 30 40 45	60 60 20 40 45	0 10 0 0 0,269	0,194 0,525 0,197 0,160 0,269	970 2625 985 800 1345
4 Centium 36 CS 0,15 L/ha A Proman 0,5 L/ha A Roundup Bio 1,5 L/ha B Pixxaro EC 0,05 L/ha E Pixxaro EC 0,075 L/ha G Mean =	102 210 304 409 Mean =	0 0 0 0 0	25 25 25 25 25	30 30 30 25 60	45 65 65 65 60	60 60 50 70 60	55 65 60 80 85	85 95 80 80 71	60 80 65 80 71	60 75 65 65 66	30 70 40 60 66	60 60 80 60 68	0 50 50 40 35	40 50 60 50 50	10 10 0 10 8	0,362 0,125 0,190 0,255 0,233	1810 625 950 1275 1165
5 Centium 36 CS 0,15 L/ha A Proman 0,5 L/ha A Roundup Bio 1,5 L/ha B Pixxaro EC 0,125 L/ha F Mean =	110 204 308 403 Mean =	0 0 0 0 0	0 35 25 30 30	30 40 40 65 49	40 75 40 50 56	60 70 40 55 60	60 75 50 70 73	85 95 80 75 73	70 70 45 65 60	50 50 50 75 60	40 40 40 50 45	80 70 60 60 80	55 50 40 60 51	50 50 30 40 48	10 10 20 0 10	0,373 0,615 0,190 0,459 0,409	1865 3075 950 2295 2046
6 Centium 36 CS 0,15 L/ha A Proman 0,5 L/ha A Roundup Bio 1,5 L/ha B Goltix Gold 0,5 L/ha D Goltix Gold 0,5 L/ha E Mean =	108 205 309 406 Mean =	40 40 40 35 39	40 40 40 40 40	35 40 30 34 35	25 50 20 55 38	65 70 40 70 61	55 70 45 70 60	70 85 80 80 79	35 70 40 55 60	20 50 0 65 50	20 30 0 40 40	65 60 60 60 61	50 30 20 20 30	40 0 20 20 20	30 20 10 0 15	0,181 0,437 0,197 0,578 0,348	905 2185 985 2890 1741
7 Centium 36 CS 0,15 L/ha A Proman 0,5 L/ha A Roundup Bio 1,5 L/ha B Goltix Gold 0,5 L/ha E Goltix Gold 0,5 L/ha F Mean =	106 208 302 404 Mean =	0 30 0 0 8	10 30 20 20 20	45 50 40 45 45	55 70 75 60 65	60 80 65 50 64	40 75 60 60 59	65 90 70 65 73	40 80 50 65 59	40 65 50 40 49	50 30 50 40 43	60 85 60 60 69	0 60 40 40 35	0 50 20 20 23	35 40 25 20 30	0,402 0,428 0,339 0,418 0,397	2010 2140 1695 2090 1984

Assessed By	22-5-2023	26-5-2023	2-6-2023	2-6-2023	2-6-2023	2-6-2023	2-6-2023	2-6-2023	2-6-2023	14-6-2023	14-6-2023	14-6-2023	14-6-2023	14-6-2023	14-6-2023	PEA 10-8-2023	PEA 10-8-2023	
Rating Date																SEED; C	SEED; C	
Part Rated																YIELD	YIELD	
Rating Type	PHYGEN	PHYGEN	PHYGEN	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN			
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	kg; -; -	kg/ha; -; -	
Collection Basis																2 m2	1 ha	
Number of Subsamples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	
Pest Type				W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed	VERAR	VERAR	
Pest Code				POLCO	VERAR	VIOAR	STEME	BBBBB	BBBBB	POLCO	VIOAR	STEME	VERAR	BBBBB	BBBBB			
Pest Name				wild buckwheat	Wall speedwell	Field pansy	chickweed	Broad-leaved plants	wild buckwheat	Field pansy	chickweed	Wall speedwell	Broad-leaved plants	Broad-leaved plants				
Days After First/Last Applic.	-; 6	-; 4	-; 2	-; 2	-; 2	-; 2	-; 2	-; 2	-; 14	-; 14	-; 14	-; 14	-; 14	-; 14	-; 14	-; 71	-; 71	
Trt-Eval Interval	0 DA-E	0 DA-F	7 DA-F	7 DA-F	7 DA-F	7 DA-F	7 DA-F	7 DA-F	14 DA-G	14 DA-G	14 DA-G	14 DA-G	14 DA-G	14 DA-G	14 DA-G			
ARM Action Codes																		
Number of Decimals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	T1	
Footnote Number																1	1	
Trt Treatment																		
Rate Appl Appl																		
No. Name																		
Rate Unit Code Timing Plot																		
8 Centium 36 CS	0,15 L/ha A	107	0	35	50	80	70	75	80	60	40	40	60	40	50	35	0,277	1385
Proman	0,5 L/ha A	203	0	35	55	80	75	65	80	80	50	40	60	40	60	35	0,561	2805
Roundup Bio	1,5 L/ha B	310	0	40	50	80	70	75	95	80	20	40	90	20	65	40	0,371	1855
Pixxaro EC	0,05 L/ha E	405	0	35	50	85	75	70	90	80	65	0	70	0	50	20	0,589	2945
Goltix Gold	0,5 L/ha E																	
Goltix Gold	0,5 L/ha F																	
Mean =		0	36	51	81	73	71	86	75	44	30	70	25	56	33	0,450	2248	
9 Centium 36 CS	0,15 L/ha A	101	0	35	50	70	65	60	90	65	70	40	40	40	40	30	0,571	2855
Proman	0,5 L/ha A	207	0	35	55	90	85	70	75	85	80	65	85	40	80	40	0,310	1550
Roundup Bio	1,5 L/ha B	305	0	40	45	85	70	70	85	70	70	40	70	40	50	35	0,479	2395
Pixxaro EC	0,05 L/ha E	402	0	35	55	80	65	70	85	80	60	50	75	0	70	35	0,532	2660
Goltix Gold	0,5 L/ha E																	
Goltix Gold	0,5 L/ha F																	
Pixxaro EC	0,075 L/ha G																	
Mean =		0	36	51	81	71	68	84	75	70	49	68	30	60	35	0,473	2365	
10 Centium 36 CS	0,15 L/ha A	103	0	35	35	65	55	65	90	70	75	70	90	20	70	35	0,462	2310
Proman	0,5 L/ha A	201	20	35	40	80	60	75	95	80	85	80	100	40	70	30	0,613	3065
Roundup Bio	1,5 L/ha B	307	0	35	30	80	70	70	85	80	70	60	90	50	80	40	0,228	1140
Pixxaro EC	0,05 L/ha E	410	0	35	30	80	80	75	90	80	70	70	90	40	65	40	0,344	1720
Proman	0,15 L/ha E																	
Pixxaro EC	0,075 L/ha G																	
Proman	0,15 L/ha G																	
Mean =		5	35	34	76	66	71	90	78	75	70	93	38	71	36	0,412	2059	

Part Rated
 SEED = seed
 C = Crop is Part Rated
 Rating Type
 PHYGEN = phytotoxicity - general / injury
 CONTRO = control / burndown or knockdown
 YIELD = yield
 Rating Unit/Min/Max
 %, 0, 100 = percent
 kg, = kilogram
 kg/ha, = kilograms per hectare
 m2 = square meter
 ha = hectare
 Crop Type, Code
 C = EPPO species (Bayer) codes
 SPQOL, BVNH, Spinacia oleracea, Spinach = US
 Pest Type
 W, Weed = Weed or volunteer crop
 Pest Code
 POLCO, Fallopia convolvulus, wild buckwheat = US
 VERAR, Veronica arvensis, Wall speedwell = US
 VIOAR, Viola arvensis, Field pansy = US
 STEME, Stellaria media, chickweed = US
 BBBBB, Broad-leaved plants, Broad-leaved plants = US

Footnote 1: 10-08-2023: Forsøget håndhostet på 4 meter række (2 m2). Januar 2024 froprover rensat af Per.

20428 Effekt og tolerance forsøg i spinat til frø

Effekt- og toleranceafprøvning af Proman i spinat													
Afgrøder:	Spinat og raps (udsået)						Hele arealet dampbehandles						
	Før fremspiring			Spinat 2 blade					Spinat 4 blade				
	Doseringer af Proman						Dosering Asulox		Doseringer af Proman			Dosering Asulox	
	0,25	0,5	1,0	0,15	0,3	0,6	1,0	2,0	0,15	0,3	0,6	1,0	2,0
Ubehandlet													
2								X					
3													X
4							X					X	
5	X												
6		X											
7			X										
8				X									
9					X								
10						X							
11									X				
12										X			
13											X		
14				X					X				
15				X						X			
16				X							X		
17					X				X				
18					X					X			
19					X						X		
20		X		X						X			
21			X	X						X			
22		X			X					X			
23			X		X					X			
24		X								X			
25			X							X			
26		X									X		
27			X								X		

Effekt- og toleranceafprøvning af Proman i spinat med raps som target.

Trial ID: 23428

Protocol ID: 22426 Location: Flakkebjerg Trial Year: 2022

Project ID: 29894 Project ID 2: Project ID 3:

Study Director: Peter Hartvig

Sponsor Contact:

Investigator: Andrius Hansen Kemezys

Trt No.	Type	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	Appl Description	Appl Timing
1	CHK	Ubehandlet							
2	HERB	Asulox	400	SC	2	L/ha	B		
3	HERB	Asulox	400	SC	2	L/ha	C		
4	HERB HERB	Asulox Asulox	400 400	SC SC	1 1	L/ha L/ha	B C		
5	HERB	Proman	500	SC	0,25	L/ha	A	Før fremspiring	
6	HERB	Proman	500	SC	0,5	L/ha	A	Før fremspiring	
7	HERB	Proman	500	SC	1	L/ha	A	Før fremspiring	
8	HERB	Proman	500	SC	0,15	L/ha	B	BBCH 12 spinat	
9	HERB	Proman	500	SC	0,3	L/ha	B	BBCH 12 spinat	
10	HERB	Proman	500	SC	0,6	L/ha	B	BBCH 12 spinat	
11	HERB	Proman	500	SC	0,15	L/ha	C	BBCH 14 spinat	
12	HERB	Proman	500	SC	0,3	L/ha	C	BBCH 14 spinat	
13	HERB	Proman	500	SC	0,6	L/ha	C	BBCH 14 spinat	
14	HERB HERB	Proman Proman	500 500	SC SC	0,15 0,15	L/ha L/ha	B C		
15	HERB HERB	Proman Proman	500 500	SC SC	0,15 0,3	L/ha L/ha	B C		
16	HERB HERB	Proman Proman	500 500	SC SC	0,15 0,6	L/ha L/ha	B C		
17	HERB HERB	Proman Proman	500 500	SC SC	0,3 0,15	L/ha L/ha	B C		
18	HERB HERB	Proman Proman	500 500	SC SC	0,3 0,3	L/ha L/ha	B C		
19	HERB HERB	Proman Proman	500 500	SC SC	0,3 0,6	L/ha L/ha	B C		
20	HERB HERB HERB	Proman Proman Proman	500 500 500	SC SC SC	0,5 0,15 0,3	L/ha L/ha L/ha	A B C		
21	HERB HERB HERB	Proman Proman Proman	500 500 500	SC SC SC	1 0,15 0,3	L/ha L/ha L/ha	A B C		
22	HERB HERB HERB	Proman Proman Proman	500 500 500	SC SC SC	0,5 0,3 0,3	L/ha L/ha L/ha	A B C		
23	HERB HERB HERB	Proman Proman Proman	500 500 500	SC SC SC	1 0,3 0,3	L/ha L/ha L/ha	A B C		
24	HERB HERB	Proman Proman	500 500	SC SC	0,5 0,3	L/ha L/ha	A C		
25	HERB HERB	Proman Proman	500 500	SC SC	1 0,3	L/ha L/ha	A C		
26	HERB HERB	Proman Proman	500 500	SC SC	0,5 0,6	L/ha L/ha	A C		
27	HERB HERB	Proman Proman	500 500	SC SC	1 0,6	L/ha L/ha	A C		

Replications: 4, Untreated treatments: 1, Conduct under GLP/GEP: Yes (GEP with no protection), Design: Randomized Complete Block (RCB), Treatment units: Treated 'Plot' experimental unit size, Dry Form. Unit: %, Treated 'Plot' experimental unit size Width: 4 meters, Treated 'Plot' experimental unit size Length: 6 meters, Application amount: 200 L/ha, Mix size: 1.92 L, Format definitions: G-All7.def, G-All7.frm

Trial Comments

Effekt- og toleranceafprøvning af Proman i spinat med raps som target.

Trial ID: 23428
 Protocol ID: 22426 Location: Flakkebjerg Trial Year: 2022
 Project ID: 29894 Project ID 2: Project ID 3:
 Study Director: Peter Hartvig Sponsor Contact:
 Investigator: Andrius Hansen Kemezs

Trial Map Treatment Description

Trt	Code	Description
1	CHK	Ubehandlet
2		Proman .25 L/ha
3		Proman 0.5 L/ha
4		Proman 1 L/ha
5		Proman 0.15 L/ha
6		Proman 0.3 L/ha
7		Proman .6 L/ha
8		Proman 0.15 L/ha
9		Proman 0.3 L/ha
10		Proman 0.6 L/ha
11		Proman 0.15 L/ha
12		Proman 0.15 L/ha;Proman 0.3 L/ha
13		Proman 0.15 L/ha;Proman 0.6 L/ha
14		Proman 0.3 L/ha;Proman 0.15 L/ha
15		Proman 0.3 L/ha;Proman 0.3 L/ha
16		Proman 0.3 L/ha;Proman 0.6 L/ha
17		Proman 0.5 L/ha;Proman 0.15 L/ha;Proman 0.3 L/ha
18		Proman 1 L/ha;Proman 0.15 L/ha;Proman 0.3 L/ha
19		Proman 0.5 L/ha;Proman 0.3 L/ha;Proman 0.3 L/ha
20		Proman 1 L/ha;Proman 0.3 L/ha;Proman 0.3 L/ha
21		Proman 0.5 L/ha;Proman 0.3 L/ha
22		Proman 1 L/ha;Proman 0.3 L/ha
23		Proman 0.5 L/ha;Proman 0.6 L/ha
24		
25		Proman 0.5 L/ha;Proman 0.6 L/ha
26		Proman 1 L/ha;Proman 0.6 L/ha
27		



Aarhus University, Department of Agroecology, Flakkebjerg

Effekt- og toleranceafprøvning af Proman i spinat med raps som target.

Trial ID: 23428

Protocol ID: 22426 Location: Flakkebjerg Trial Year: 2022

Project ID: 29894 Project ID 2: Project ID 3:

Study Director: Peter Hartvig Sponsor Contact:

Investigator: Andrius Hansen Kemezs

General Trial Information

Study Director: Peter Hartvig

Investigator: Andrius Hansen Kemezs

Discipline: H herbicide

Status: E established

ARM Trial Created On: 31-3-2023

Trial Location

City: Flakkebjerg

Country: DNK Denmark

State/Prov.: Region Sjælland

Postal Code: 4200

Climate Zone: EPOMAR EPP0 Maritime

Latitude of LL Corner °: 55,324871 N

Longitude of LL Corner °: 11,384996 E

Conclusions:**Konklusion 23428: Effekt og toleranceafprøvning af Proman i spinat**

Forsøget blev udført på forskningscentret AU Flakkebjerg. Forsøget har til formål at undersøge effekten og selektiviteten af Proman i forskellige doseringer og behandlings tidspunkter. Forsøget blev etableret i dampbehandlede parceller, for at undgå konkurrence fra naturligt forekommende ukrudt. På forsøgsarealet blev der ved såning af spinat ligeledes udsået raps som kontrol ukrudt.

Forsøget blev behandlet ved 3 forskellige behandlingstidspunkter. Behandling A 17. april før fremspiring af spinat, behandling B 15. maj spinat BBCH 12 og behandling C 22. maj spinat BBCH 14.

Forsøget blev bedømt for skade på spinat og effekt på raps3 gange ved hhv. 4, 10 og 21 DA.E.C (dage efter behandling C).

Ved første bedømmelse for skade på spinat ultimo maj, viste alle led signifikant skade i forhold til ubehandlet, hvor Proman er anvendt i split behandling A, B, og C samt split behandling B og C og som enkelt behandling B eller C er skaden signifikant større end hvor der er udført en enkelt behandling med Proman på behandlings tidspunkt A og i forhold til reference produktet Asulox.

Ved anden bedømmelse primo juni er der signifikant kraftig skader på spinaten, hvor Proman er anvendt i split behandling A, B, og C samt split behandling B og C og som enkelt behandling C, 31-56% skade, i enkelt behandlingen B er det kun doseringen 0,6 L Proman, 26% skade, som har signifikant højere skader end hvor der er udført en enkelt behandling med Proman på behandlings tidspunkt A eller B og i forhold til reference produktet Asulox.

Ved den sidste bedømmelse for skade medio juni 21 DA.E.C er skaden i alle led aftaget, skaden er på dette tidspunkt ikke signifikant forskellig mellem doseringerne og behandlings tidspunkterne. Der er dog stadig størst skader hvor Proman er anvendt i split behandling A, B, og C samt split behandling B og C og som enkelt behandling C, 15-29% skade, i enkelt behandlingen B er det kun doseringen 0,6 L Proman, 21% skade. Skaden efter enkelt behandling med Proman på behandlings tidspunkt A eller B i doseringen 0,15 L og 0,3 L og i forhold til reference produktet Asulox, er 5-14% skade.

Effekten på raps er bedømt på de samme tidspunkter som skade bedømmelserne, ved den sidste bedømmelse for effekt på raps medio maj, er der ingen signifikant forskel mellem behandlingerne, effekten er på dette tidspunkt meget lav 0-37% effekt. Der er en tendens til at jo højere dosering samt split behandling med Proman der er anvendt jo bedre er effekten over for raps. Effekten af reference produktet Asulox er også uforklarligt lav 4-22%, selv om det på behandlings tidspunkterne var over 20 grader celsius.

Forsøget viser at spinat er noget påvirket af behandlingerne med Proman både som enkelt behandling men især når det anvendes i split behandling samt jo højere dosering der anvendes. Effekten på raps er ikke acceptabel for nogle af behandlingerne, den lave effekt kan måske skyldes at rapsen var lidt til den store side på behandlings tidspunkterne, ved behandling B var rapsen i stadie 11-12 BBCH og på behandlings tidspunkt C var rapsen i stadie 12-16 BBCH.

Contacts

Role: STYDIR study director

Study Director: Peter Hartvig

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Phone No.: +4587158203

Mobile No.: +4522283301

Country: DNK Denmark

City: 4200 Slagelse

Role: INVEST investigator

Investigator: Andrius Hansen Kemezys

Crop Description

Crop 1: C SPQOL Spinacia oleracea Spinach

BBCH Scale: BVNH

Entry Date: 17-7-2023

Stage Scale: BBCH

Pest Description

Pest 1 Type: W **Code:** BRSNN Brassica napus

Entry Date: 17-7-2023

Common Name: oilseed rape

Stage Scale: BBCH

Site and Design			
Treated Plot Width:	4	m	
Treated Plot Length:	6	m	
Treated Plot Area:	24,0	m ²	
Replications:	4	Treatments:	27
		Plots:	108
		Study Design:	RACOBL Randomized Complete Block (RCF)

Application Description			
	A	B	C
Date	27-4-2023	15-5-2023	22-5-2023
Start Time	13:10	12:00	16:00
Stop Time	13:45	13:15	16:40
Applied By	AHK	VLI	AHK
Entry Date	19-6-2023	19-6-2023	19-6-2023
Air Temperature Start, Stop	-; 9,9 C	-; 22,6 C	-; 21,7 C
% Relative Humidity Start, Stop	-; 36	-; 31	-; 23
Wind Velocity+Dir. Start	4,1 MPS; W	0,8 MPS; NW	2 MPS; W
Wet Leaves (Y/N)	N; no	N; no	N; no
Soil Temperature	10 C	22,5 C	23,9 C
Soil Moisture		DRY	DRY
% Cloud Cover		50	40

Crop Stage At Each Application			
	A	B	C
Crop 1 Code, BBCH Scale	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH
Stage Majority, Percent	03; -	12; -	14; -

Pest Stage At Each Application			
	A	B	C
Pest 1 Code, Type, Scale	BRSNN; W; BBCH	BRSNN; W; BBCH	BRSNN; W; BBCH
Stage Majority, Percent		11-12; -	12-16; -

Application Equipment		
	B	C
Equipment Name	Verners spra	Selvkørende
Equipment Type	SPRAY	SPRAYE
Operation Pressure	2,7 BAR	37 BAR
Nozzle Model	LD015-110	LD015-110
Nozzle Type	Hardi	Hardi
Nozzle Spacing	50,0 cm	50,0 cm
Nozzles/Row	5,0	5,0
Band Width	50,0 0	50,0 0
Boom Length	2,5 m	2,5 m
Boom Height	50,0 cm	50,0 cm
Ground Speed	3,4 KPH	3,6 KPH
Application Amount	200 L/ha	200 WATER
Mix Size	3,0 liters	3,0 liters

Notes			
Context	Date	By	Notes
STATUS	31-3-2023	Andrius Hansen Kemezys	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	26-5-2023	Andrius Hansen Kemezys	Automatically added by ARM: Status changed to: E: changed by (XDAKEA).
STATUS	26-5-2023	Andrius Hansen Kemezys	Automatically added by ARM: Trial Status updated to 'E' when Rating Date entered.

Effekt- og toleranceafprøvning af Proman i spinat med raps som target.

Trial ID: 23428

Protocol ID: 22426 Location: Flakkebjerg Trial Year: 2022

Project ID: 29894 Project ID 2: Project ID 3:

Study Director: Peter Hartvig Sponsor Contact:

Investigator: Andrius Hansen Kemezys

Rating Date	26-5-2023	26-5-2023	1-6-2023	1-6-2023	12-6-2023
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	PHYGEN
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach
Crop Stage Majority/Min/Max	16; -; -	16; -; -	18; -; -	18; -; -	59; -; -
Pest Type		W; Weed		W; Weed	
Pest Code		BRSNN		BRSNN	
Pest Scientific Name		Brassica napus		Brassica napus	
Pest Name		oilseed rape		oilseed rape	
Days After First/Last Applic.	29; 4	29; 4	35; 10	35; 10	46; 21
Trt-Eval Interval	4 DA-C	4 DA-C	10 DA-C	10 DA-C	21 DA-C
Trt No.	Treatment Name	Rate	Appl Unit	Appl Code	Timing
1	Ubehandlet	0,0			0,0
2	Asulox	2 L/ha	B		15,0 d
3	Asulox	2 L/ha	C		12,5 d
4	Asulox	1 L/ha	B		7,5 d
	Asulox	1 L/ha	C		17,5 de
5	Proman	0,25 L/ha	A		10,0 d
6	Proman	0,5 L/ha	A		18,8 de
7	Proman	1 L/ha	A		7,5 d
8	Proman	0,15 L/ha	B		15,0 d
9	Proman	0,3 L/ha	B		10,0 d
10	Proman	0,6 L/ha	B		18,8 d
11	Proman	0,15 L/ha	C		8,8 -
12	Proman	0,3 L/ha	C		25,0 bc
13	Proman	0,6 L/ha	C		20,0 de
14	Proman	0,15 L/ha	B		12,5 d
	Proman	0,15 L/ha	C		18,8 d
15	Proman	0,15 L/ha	B		10,0 -
	Proman	0,3 L/ha	C		5,0 -
16	Proman	0,15 L/ha	B		23,8 cd
	Proman	0,6 L/ha	C		15,0 -
17	Proman	0,15 L/ha	B		23,8 cd
	Proman	0,3 L/ha	C		16,3 -
18	Proman	0,15 L/ha	B		23,8 cd
	Proman	0,3 L/ha	C		15,0 -
19	Proman	0,15 L/ha	B		51,3 abc
	Proman	0,6 L/ha	C		16,3 -
20	Proman	0,15 L/ha	B		51,3 abc
	Proman	0,3 L/ha	C		20,0 -
21	Proman	0,15 L/ha	B		71,3 a
	Proman	0,6 L/ha	C		26,3 -
22	Proman	0,3 L/ha	B		48,8 abc
	Proman	0,15 L/ha	C		18,8 -
23	Proman	0,3 L/ha	B		40,0 a
	Proman	0,3 L/ha	C		47,5 a
24	Proman	0,3 L/ha	B		46,3 ab
	Proman	0,3 L/ha	C		61,3 a
25	Proman	0,3 L/ha	B		55,0 a
	Proman	0,6 L/ha	C		75,0 a
26	Proman	0,5 L/ha	A		43,8 ab
	Proman	0,15 L/ha	B		51,3 abc
	Proman	0,3 L/ha	C		22,5 -
27	Proman	1 L/ha	A		52,5 a
	Proman	0,15 L/ha	B		53,8 abc
	Proman	0,3 L/ha	C		22,5 -
28	Proman	0,5 L/ha	A		50,0 a
	Proman	0,3 L/ha	B		50,0 a
	Proman	0,3 L/ha	C		63,8 a
29	Proman	1 L/ha	A		52,5 a
	Proman	0,3 L/ha	B		62,5 a
	Proman	0,3 L/ha	C		25,0 -
30	Proman	0,5 L/ha	A		42,5 ab
	Proman	0,3 L/ha	C		48,8 abc
31	Proman	1 L/ha	A		45,0 ab
	Proman	0,3 L/ha	C		51,3 abc
32	Proman	1 L/ha	A		20,0 -
	Proman	0,3 L/ha	C		

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Untreated treatment(s) 1 excluded from analysis.

^Calculated from residual.

Rating Date	26-5-2023	26-5-2023	1-6-2023	1-6-2023	12-6-2023
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	PHYGEN
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach
Crop Stage Majority/Min/Max	16; -; -	16; -; -	18; -; -	18; -; -	59; -; -
Pest Type		W; Weed		W; Weed	
Pest Code		BRSNN		BRSNN	
Pest Scientific Name		Brassica napus		Brassica napus	
Pest Name		oilseed rape		oilseed rape	
Days After First/Last Applic.	29; 4	29; 4	35; 10	35; 10	46; 21
Trt-Eval Interval	4 DA-C	4 DA-C	10 DA-C	10 DA-C	21 DA-C
Trt No.	Treatment Name	Rate	Appl Unit	Appl Code	Appl Timing
26	Proman	0,5 L/ha	A		
	Proman	0,6 L/ha	C		
		36,3	ab		
27	Proman	1 L/ha	A		
	Proman	0,6 L/ha	C		
		37,5	a		
LSD P=.05	6,92	10,89	9,41	17,26	14,23
CV	17,56	21,21	19,33	27,7	55,88
Shapiro-Wilk^	0,9852	0,9767	0,9819	0,9564*	0,9836
P(Shapiro-Wilk)^	0,3036	0,0631	0,1656	0,0018*	0,2259
Replicate F	1,076	1,444	2,031	4,838	2,726
Replicate Prob(F)	0,3645	0,2368	0,1168	0,0039	0,0500
Treatment F	18,880	9,442	29,165	9,713	1,971
Treatment Prob(F)	0,0001	0,0001	0,0001	0,0001	0,0130

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
 Untreated treatment(s) 1 excluded from analysis.
 ^Calculated from residual.

Rating Date	12-6-2023		
Rating Type	CONTRO		
Rating Unit/Min/Max	%: 0; 100		
Crop Type, Code	C; SPQOL		
BBCH Scale	BvNH		
Crop Scientific Name	Spinacia oleracea		
Crop Name	Spinach		
Crop Stage Majority/Min/Max	59; -; -		
Pest Type	W; Weed		
Pest Code	BRSNN		
Pest Scientific Name	Brassica napus		
Pest Name	oilseed rape		
Days After First/Last Applic.	46; 21		
Trt-Eval Interval	21 DA-C		
Trt No.	Treatment Name	Rate	Appl Unit Code Timing
1	Ubehandlet		0,0
2	Asulox	2 L/ha	B 22,5 ab
3	Asulox	2 L/ha	C 3,8 ab
4	Asulox	1 L/ha	B 10,0 ab
	Asulox	1 L/ha	C
5	Proman	0,25 L/ha	A 0,0 b
6	Proman	0,5 L/ha	A 10,0 ab
7	Proman	1 L/ha	A 8,8 ab
8	Proman	0,15 L/ha	B 6,3 ab
9	Proman	0,3 L/ha	B 15,0 ab
10	Proman	0,6 L/ha	B 31,3 ab
11	Proman	0,15 L/ha	C 5,0 ab
12	Proman	0,3 L/ha	C 20,0 ab
13	Proman	0,6 L/ha	C 28,8 ab
14	Proman	0,15 L/ha	B 13,8 ab
	Proman	0,15 L/ha	C
15	Proman	0,15 L/ha	B 22,5 ab
	Proman	0,3 L/ha	C
16	Proman	0,15 L/ha	B 31,3 ab
	Proman	0,6 L/ha	C
17	Proman	0,3 L/ha	B 26,3 ab
	Proman	0,15 L/ha	C
18	Proman	0,3 L/ha	B 28,8 ab
	Proman	0,3 L/ha	C
19	Proman	0,3 L/ha	B 41,3 a
	Proman	0,6 L/ha	C
20	Proman	0,5 L/ha	A 20,0 ab
	Proman	0,15 L/ha	B
	Proman	0,3 L/ha	C
21	Proman	1 L/ha	A 25,0 ab
	Proman	0,15 L/ha	B
	Proman	0,3 L/ha	C
22	Proman	0,5 L/ha	A 26,3 ab
	Proman	0,3 L/ha	B
	Proman	0,3 L/ha	C
23	Proman	1 L/ha	A 30,0 ab
	Proman	0,3 L/ha	B
	Proman	0,3 L/ha	C
24	Proman	0,5 L/ha	A 18,8 ab
	Proman	0,3 L/ha	C
25	Proman	1 L/ha	A 11,3 ab
	Proman	0,3 L/ha	C

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Untreated treatment(s) 1 excluded from analysis.

^Calculated from residual.

Rating Date	12-6-2023					
Rating Type	CONTRO					
Rating Unit/Min/Max	%; 0; 100					
Crop Type, Code	C; SPQOL					
BBCH Scale	BVNH					
Crop Scientific Name	Spinacia oleracea					
Crop Name	Spinach					
Crop Stage Majority/Min/Max	59; -; -					
Pest Type	W; Weed					
Pest Code	BRSNN					
Pest Scientific Name	Brassica napus					
Pest Name	oilseed rape					
Days After First/Last Applic.	46; 21					
Trt-Eval Interval	21 DA-C					
Trt No.	Treatment Name	Rate	Appl Unit	Appl Code	Appl Timing	
26	Proman	0,5	L/ha	A		22,5 ab
	Proman	0,6	L/ha	C		
27	Proman	1	L/ha	A		37,5 ab
	Proman	0,6	L/ha	C		
LSD P=.05	20,81					
CV	74,39					
Shapiro-Wilk^	0,984					
P(Shapiro-Wilk)^	0,2431					
Replicate F	13,876					
Replicate Prob(F)	0,0001					
Treatment F	2,151					
Treatment Prob(F)	0,0059					

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Untreated treatment(s) 1 excluded from analysis.

^Calculated from residual.

Effekt- og toleranceafprøvning af Proman i spinat med raps som target.

Trial ID: 23428

Protocol ID: 22426 Location: Flakkebjerg Trial Year: 2022

Project ID: 29894 Project ID 2: Project ID 3:

Study Director: Peter Hartvig Sponsor Contact:

Investigator: Andrius Hansen Kemezys

Rating Type

PHYGEN = phytotoxicity - general / injury

CONTRO = control / burndown or knockdown

Rating Unit/Min/Max

%, 0, 100 = percent

Crop Type Code

C = EPPO species (Bayer) codes

SPQOL, BVNH, Spinacia oleracea, Spinach = US

Crop Stage Majority/Min/Max

16 = 6th true leaf unfolded

18 = 8th true leaf unfolded

59 = First flower petals visible; flowers stillclosed

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

BRSNN, Brassica napus, oilseed rape = US

Effekt- og toleranceprøvning af Proman i spinat med raps som target.

Trial ID: 23428
 Protocol ID: 22426 Location: Flakkebjerg Trial Year: 2022
 Project ID: 29894 Project ID 2: Project ID 3:
 Study Director: Peter Hartvig Sponsor Contact:
 Investigator: Andrius Hansen Kemezys

Aarhus University, Department of Agroecology, Flakkebjerg

Rating Date	26-5-2023	26-5-2023	1-6-2023	1-6-2023	12-6-2023	12-6-2023	
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	PHYGEN	CONTRO	
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	
Number of Subsamples	1	1	1	1	1	1	
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	
Crop Stage Majority/Min/Max	16; -; -	16; -; -	18; -; -	18; -; -	59; -; -	59; -; -	
Pest Type		W; Weed		W; Weed		W; Weed	
Pest Code		BRSNN		BRSNN		BRSNN	
Pest Name		oilseed rape		oilseed rape		oilseed rape	
Days After First/Last Appl.	29; 4	29; 4	35; 10	35; 10	46; 21	46; 21	
Tri-Eval Interval	4 DA-C	4 DA-C	10 DA-C	10 DA-C	21 DA-C	21 DA-C	
ARM Action Codes		EC		EC		EC	
Data Entry Date	26-5-2023	26-5-2023	1-6-2023	1-6-2023	19-6-2023	19-6-2023	
Trt Treatment							
Rate Appl Appl							
No. Name							
Rate Unit Code Timing Plot							
1 Ubehandlet	101 207 308 409 Mean =	0,0 0,0 0,0 0,0 0,0	0,0 0,0 0,0 0,0 0,0	0,0 0,0 0,0 0,0 0,0	0,0 0,0 0,0 0,0 0,0	0,0 0,0 0,0 0,0 0,0	
2 Asulox 2 L/ha B	109 220 316 413 Mean =	20,0 10,0 20,0 10,0 15,0	25,0 20,0 40,0 25,0 27,5	20,0 10,0 0,0 10,0 10,0	80,0 20,0 0,0 10,0 27,5	25,0 10,0 0,0 20,0 13,8	70,0 10,0 0,0 10,0 22,5
3 Asulox 2 L/ha C	120 223 303 411 Mean =	10,0 20,0 10,0 10,0 12,5	10,0 40,0 20,0 20,0 22,5	10,0 10,0 0,0 10,0 7,5	30,0 25,0 10,0 10,0 18,8	30,0 10,0 10,0 0,0 12,5	15,0 0,0 0,0 0,0 3,8
4 Asulox 1 L/ha B Asulox 1 L/ha C	102 226 309 402 Mean =	0,0 10,0 10,0 10,0 7,5	0,0 35,0 15,0 20,0 17,5	0,0 0,0 10,0 30,0 10,0	30,0 20,0 30,0 40,0 30,0	0,0 0,0 0,0 40,0 10,0	0,0 0,0 0,0 40,0 10,0
5 Proman 0,25 L/ha A	103 221 310 418 Mean =	10,0 10,0 10,0 10,0 10,0	25,0 10,0 20,0 20,0 18,8	0,0 10,0 10,0 10,0 7,5	20,0 10,0 20,0 10,0 15,0	5,0 15,0 5,0 0,0 6,3	0,0 0,0 0,0 0,0 0,0
6 Proman 0,5 L/ha A	126 212 326 408 Mean =	10,0 10,0 10,0 10,0 10,0	10,0 20,0 10,0 10,0 12,5	0,0 0,0 20,0 10,0 7,5	0,0 0,0 20,0 10,0 10,0	0,0 10,0 20,0 0,0 7,5	0,0 15,0 25,0 0,0 10,0
7 Proman 1 L/ha A	122 208 327 423 Mean =	20,0 0,0 10,0 10,0 10,0	20,0 10,0 20,0 20,0 17,5	20,0 0,0 10,0 10,0 10,0	25,0 10,0 20,0 20,0 18,8	25,0 0,0 10,0 0,0 8,8	35,0 0,0 0,0 0,0 8,8
8 Proman 0,15 L/ha B	104 211 322 405 Mean =	25,0 20,0 25,0 30,0 25,0	10,0 20,0 25,0 25,0 20,0	10,0 10,0 10,0 20,0 12,5	15,0 10,0 20,0 30,0 18,8	15,0 20,0 5,0 0,0 10,0	5,0 20,0 0,0 0,0 6,3
9 Proman 0,3 L/ha B	127 204 323 421 Mean =	35,0 25,0 30,0 35,0 31,3	30,0 10,0 20,0 50,0 27,5	15,0 10,0 10,0 20,0 13,8	15,0 10,0 20,0 50,0 23,8	10,0 10,0 0,0 0,0 5,0	30,0 0,0 0,0 30,0 15,0
10 Proman 0,6 L/ha B	114 218 321 425 Mean =	35,0 25,0 40,0 40,0 35,0	50,0 30,0 35,0 50,0 41,3	25,0 25,0 20,0 35,0 26,3	80,0 30,0 30,0 50,0 47,5	20,0 20,0 10,0 35,0 21,3	65,0 25,0 0,0 35,0 31,3
11 Proman 0,15 L/ha C	124 225 307 416 Mean =	25,0 30,0 20,0 20,0 23,8	25,0 25,0 40,0 40,0 32,5	20,0 30,0 30,0 45,0 31,3	10,0 15,0 30,0 40,0 23,8	15,0 10,0 15,0 20,0 15,0	0,0 0,0 20,0 0,0 5,0

Rating Date	26-5-2023	26-5-2023	1-6-2023	1-6-2023	12-6-2023	12-6-2023		
Rating Type	PHYGEN	CONTRO	PHYGEN	PHYGEN	PHYGEN	CONTRO		
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100		
Number of Subsamples	1	1	1	1	1	1		
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL		
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH		
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach		
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH		
Crop Stage Majority/Min/Max	16; -; -	16; -; -	18; -; -	18; -; -	59; -; -	59; -; -		
Pest Type		W; Weed	W; Weed	W; Weed	W; Weed	W; Weed		
Pest Code		BRSNN	BRSNN	BRSNN	BRSNN	BRSNN		
Pest Name		oilseed rape	oilseed rape	oilseed rape	oilseed rape	oilseed rape		
Days After First/Last Applic.	29; 4	29; 4	35; 10	35; 10	46; 21	46; 21		
Trt-Eval Interval	4 DA-C	4 DA-C	10 DA-C	10 DA-C	21 DA-C	21 DA-C		
ARM Action Codes		EC	EC	EC	EC	EC		
Data Entry Date	26-5-2023	26-5-2023	1-6-2023	1-6-2023	19-6-2023	19-6-2023		
Trt Treatment	Rate Appl Appl							
No. Name	Rate Unit Code Timing Plot							
12 Proman	0,3 L/ha C	105 216 306 412 Mean =	25,0 25,0 35,0 25,0 27,5	45,0 45,0 50,0 40,0 45,0	45,0 45,0 45,0 40,0 43,8	55,0 60,0 60,0 30,0 51,3	15,0 15,0 20,0 15,0 16,3	40,0 10,0 30,0 0,0 20,0
13 Proman	0,6 L/ha C	106 214 312 403 Mean =	30,0 40,0 30,0 20,0 30,0	40,0 45,0 40,0 40,0 41,3	50,0 50,0 45,0 45,0 47,5	65,0 60,0 45,0 45,0 53,8	20,0 20,0 20,0 35,0 23,8	50,0 20,0 15,0 30,0 28,8
14 Proman	0,15 L/ha B	112	30,0	45,0	35,0	60,0	10,0	25,0
Proman	0,15 L/ha C	202 318 426 Mean =	30,0 35,0 30,0 31,3	45,0 40,0 45,0 43,8	40,0 40,0 45,0 40,0	40,0 45,0 45,0 47,5	0,0 15,0 30,0 13,8	0,0 0,0 30,0 13,8
15 Proman	0,15 L/ha B	123	40,0	50,0	45,0	65,0	30,0	40,0
Proman	0,3 L/ha C	219 313 419 Mean =	25,0 30,0 35,0 32,5	30,0 45,0 40,0 41,3	50,0 45,0 45,0 46,3	40,0 55,0 45,0 51,3	35,0 15,0 0,0 20,0	20,0 20,0 10,0 22,5
16 Proman	0,15 L/ha B	111	35,0	50,0	45,0	90,0	25,0	70,0
Proman	0,6 L/ha C	209 317 424 Mean =	30,0 40,0 40,0 36,3	30,0 50,0 50,0 45,0	50,0 60,0 50,0 51,3	55,0 70,0 70,0 71,3	30,0 20,0 30,0 26,3	15,0 20,0 20,0 31,3
17 Proman	0,3 L/ha B	107	35,0	40,0	40,0	55,0	20,0	65,0
Proman	0,15 L/ha C	217 304 410 Mean =	30,0 35,0 25,0 31,3	45,0 40,0 50,0 43,8	50,0 40,0 30,0 40,0	65,0 45,0 30,0 48,8	35,0 20,0 0,0 18,8	15,0 25,0 0,0 26,3
18 Proman	0,3 L/ha B	121	40,0	40,0	40,0	60,0	35,0	40,0
Proman	0,3 L/ha C	215 325 415 Mean =	40,0 40,0 40,0 40,0	50,0 50,0 50,0 47,5	45,0 50,0 50,0 46,3	70,0 65,0 50,0 61,3	15,0 20,0 25,0 23,8	35,0 30,0 10,0 28,8
19 Proman	0,3 L/ha B	113	40,0	50,0	60,0	95,0	25,0	75,0
Proman	0,6 L/ha C	203 314 401 Mean =	40,0 40,0 40,0 40,0	50,0 50,0 50,0 50,0	45,0 55,0 60,0 55,0	70,0 65,0 70,0 75,0	20,0 25,0 45,0 28,8	10,0 25,0 55,0 41,3
20 Proman	0,5 L/ha A	117	30,0	40,0	40,0	65,0	30,0	35,0
Proman	0,15 L/ha B	224	40,0	45,0	50,0	50,0	25,0	10,0
Proman	0,3 L/ha C	315 427 Mean =	40,0 20,0 32,5	50,0 30,0 41,3	45,0 40,0 43,8	50,0 40,0 51,3	10,0 25,0 22,5	5,0 30,0 20,0
21 Proman	1 L/ha A	115	40,0	50,0	40,0	60,0	30,0	40,0
Proman	0,15 L/ha B	205	30,0	45,0	60,0	60,0	20,0	30,0
Proman	0,3 L/ha C	301 407 Mean =	40,0 40,0 37,5	45,0 45,0 47,5	50,0 65,0 52,5	50,0 45,0 53,8	20,0 20,0 22,5	20,0 10,0 25,0
22 Proman	0,5 L/ha A	116	40,0	50,0	55,0	70,0	35,0	40,0
Proman	0,3 L/ha B	213	40,0	50,0	50,0	70,0	20,0	20,0
Proman	0,3 L/ha C	305 404 Mean =	40,0 40,0 40,0	50,0 50,0 50,0	45,0 50,0 50,0	60,0 55,0 63,8	15,0 20,0 22,5	25,0 20,0 26,3
23 Proman	1 L/ha A	108	40,0	50,0	50,0	70,0	35,0	60,0
Proman	0,3 L/ha B	206	40,0	50,0	65,0	65,0	30,0	40,0
Proman	0,3 L/ha C	319 417 Mean =	40,0 40,0 40,0	45,0 50,0 48,8	45,0 50,0 52,5	55,0 60,0 62,5	25,0 10,0 25,0	10,0 10,0 30,0

Rating Date	26-5-2023	26-5-2023	1-6-2023	1-6-2023	12-6-2023	12-6-2023		
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	PHYGEN	CONTRO		
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100		
Number of Subsamples	1	1	1	1	1	1		
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL		
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH		
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach		
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH		
Crop Stage Majority/Min/Max	16; -; -	16; -; -	18; -; -	18; -; -	59; -; -	59; -; -		
Pest Type		W; Weed		W; Weed		W; Weed		
Pest Code		BRSNN		BRSNN		BRSNN		
Pest Name		oilseed rape		oilseed rape		oilseed rape		
Days After First/Last Applic.	29; 4	29; 4	35; 10	35; 10	46; 21	46; 21		
Trt-Eval Interval	4 DA-C	4 DA-C	10 DA-C	10 DA-C	21 DA-C	21 DA-C		
ARM Action Codes		EC		EC		EC		
Data Entry Date	26-5-2023	26-5-2023	1-6-2023	1-6-2023	19-6-2023	19-6-2023		
Trt Treatment	Rate Appl Appl							
No. Name	Rate Unit Code Timing Plot							
24	Proman 0,5 L/ha A	118	25,0	30,0	40,0	60,0	35,0	25,0
	Proman 0,3 L/ha C	210	25,0	30,0	45,0	40,0	35,0	25,0
		320	30,0	40,0	40,0	45,0	25,0	0,0
		422	30,0	50,0	45,0	50,0	10,0	25,0
	Mean =		27,5	37,5	42,5	48,8	26,3	18,8
25	Proman 1 L/ha A	119	25,0	30,0	45,0	40,0	35,0	20,0
	Proman 0,3 L/ha C	201	25,0	40,0	50,0	60,0	10,0	0,0
		324	30,0	45,0	45,0	55,0	25,0	15,0
		420	30,0	30,0	40,0	50,0	10,0	10,0
	Mean =		27,5	36,3	45,0	51,3	20,0	11,3
26	Proman 0,5 L/ha A	125	40,0	40,0	60,0	70,0	30,0	20,0
	Proman 0,6 L/ha C	227	40,0	50,0	60,0	65,0	25,0	15,0
		302	30,0	45,0	50,0	50,0	25,0	35,0
		406	35,0	45,0	55,0	50,0	15,0	20,0
	Mean =		36,3	45,0	56,3	58,8	23,8	22,5
27	Proman 1 L/ha A	110	30,0	40,0	45,0	70,0	30,0	70,0
	Proman 0,6 L/ha C	222	40,0	50,0	55,0	70,0	35,0	30,0
		311	40,0	50,0	50,0	65,0	10,0	30,0
		414	40,0	45,0	50,0	60,0	30,0	20,0
	Mean =		37,5	46,3	50,0	66,3	26,3	37,5

Rating Type
 PHYGEN = phytotoxicity - general / injury
 CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
 %, 0, 100 = percent
Crop Type, Code
 C = EPRO species (Bayer) codes
 SPQOL, BVNH, Spinacia oleracea, Spinach = US
Crop Stage Scale
 BBCH = BBCH uniform plant stages
Crop Stage Majority/Min/Max
 16 = 6th true leaf unfolded
 18 = 8th true leaf unfolded
 59 = First flower petals visible; flowers stillclosed
Pest Type
 W, Weed = Weed or volunteer crop
Pest Code
 BRSNN, Brassica napus, oilseed rape = US
ARM Action Codes
 EC = Do not analyze untreated check, while still reporting treatment mean on AOV Means Table

20429 Screenings forsøg i spinat til frø

Screeningsforsøg i spinat						
Faktor 1. Dosering, split, olie				Faktor 2. Udviklingstrin af spinat (sås forskudt, så behandlinger foretages samme dag)		
1.	Ubehandlet			Tidspunkt	1.	Spinat kim - 2 løvblade
2.	Centium + Proman reference	0,2 + 0,5	Ved såning	A	2.	Spinat 2-4 løvblade
3.	Goltix Gold	0,25		B		
4.	Goltix Gold	0,5		B		
5.	Goltix Gold	1,0		B		
6.	Goltix Gold + Renol	0,25 + 0,5		B		
7.	Goltix Gold + Renol	0,5 + 0,5		B		
8.	Goltix Gold + Renol	1,0 + 0,5		B		
9.	Goltix Gold	0,5		B		
	Goltix Gold	0,5	1 uge senere	C		
10.	Goltix Gold + Renol	0,5 + 0,5		B		
	Goltix Gold + Renol	0,5 + 0,5	1 uge senere	C		
11.	Goltix Gold	0,5		B		
	Goltix Gold	0,5	1 uge senere	C		
	Goltix Gold	0,5	1 uge senere	D		
12.	Goltix Gold + Renol	0,25 + 0,5		B		
	Goltix Gold + Renol	0,25 + 0,5	1 uge senere	C		
	Goltix Gold + Renol	0,25 + 0,5	1 uge senere	D		
13.	Goltix Gold + Renol	0,5 + 0,5		B		
	Goltix Gold + Renol	0,5 + 0,5	1 uge senere	C		
	Goltix Gold + Renol	0,5 + 0,5	1 uge senere	D		
14.	Goltix Gold + Renol + Megafol	0,5 + 0,5 + 2,0		B		
	Goltix Gold + Renol + Megafol	0,5 + 0,5 + 2,0	1 uge senere	C		
	Goltix Gold + Renol + Megafol	0,5 + 0,5 + 2,0	1 uge senere	D		

Alle led, undtagen led 1 ubehandlet, behandles med Centium + Proman efter såning, men før fremspiring. Tidspunkt A

Goltix Gold i spinat.

Trial ID: 23429

Protocol ID: 23429 Location: Flakkebjerg Trial Year: 2023

Project ID: Project ID 2: Project ID 3:

Study Director: Peter Hartvig

Sponsor Contact:

Investigator: Andrius Hansen Kemezs

Trt No.	Type	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	Appl Description	Appl Timing
1	CHK	Untreated Check							
2	HERB HERB	Centium 36 CS Proman	360 500	CS SC	0,2 0,5	L/ha L/ha	A A	Ved såning - også i alle øvrige led Ved såning - også i alle øvrige led	
3	HERB HERB HERB	Centium 36 CS Proman Goltix Gold	360 500 700	CS SC SC	0,2 0,5 0,25	L/ha L/ha L/ha	A A B	B=1WAA	
4	HERB HERB HERB	Centium 36 CS Proman Goltix Gold	360 500 700	CS SC SC	0,2 0,5 0,5	L/ha L/ha L/ha	A A B		
5	HERB HERB HERB	Centium 36 CS Proman Goltix Gold	360 500 700	CS SC SC	0,2 0,5 1	L/ha L/ha L/ha	A A B		
6	HERB HERB HERB ADJ	Centium 36 CS Proman Goltix Gold Renol	360 500 700 1000	CS SC SC XL	0,2 0,5 0,25 0,5	L/ha L/ha L/ha L/ha	A A B B		
7	HERB HERB HERB ADJ	Centium 36 CS Proman Goltix Gold Renol	360 500 700 1000	CS SC SC XL	0,2 0,5 0,5 0,5	L/ha L/ha L/ha L/ha	A A B B		
8	HERB HERB HERB ADJ	Centium 36 CS Proman Goltix Gold Renol	360 500 700 1000	CS SC SC XL	0,2 0,5 1 0,5	L/ha L/ha L/ha L/ha	A A B B		
9	HERB HERB HERB HERB	Centium 36 CS Proman Goltix Gold Goltix Gold	360 500 700 700	CS SC SC SC	0,2 0,5 0,5 0,5	L/ha L/ha L/ha L/ha	A A B C	C=1WAB	
10	HERB HERB HERB ADJ HERB ADJ	Centium 36 CS Proman Goltix Gold Renol Goltix Gold Renol	360 500 700 1000 700 100	CS SC SC XL SC XL	0,2 0,5 0,5 0,5 0,5 0,5	L/ha L/ha L/ha L/ha L/ha L/ha	A A B B C C		
11	HERB HERB HERB HERB HERB	Centium 36 CS Proman Goltix Gold Goltix Gold Goltix Gold	360 500 700 700 700	CS SC SC SC SC	0,2 0,5 0,5 0,5 0,5	L/ha L/ha L/ha L/ha L/ha	A A B C D	D=1WAD	
12	HERB HERB HERB ADJ HERB ADJ HERB ADJ	Centium 36 CS Proman Goltix Gold Renol Goltix Gold Renol Goltix Gold Renol	360 500 700 1000 700 1000 700 1000	CS SC SC XL SC XL SC XL	0,2 0,5 0,25 0,5 0,25 0,5 0,25 0,5	L/ha L/ha L/ha L/ha L/ha L/ha L/ha L/ha	A A B B C C D D		

Trt No.	Type	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	Appl Description	Appl Timing
13	HERB	Centium 36 CS	360	CS	0,2	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Goltix Gold	700	SC	0,5	L/ha	B		
	ADJ	Renol	1000	XL	0,5	L/ha	B		
	HERB	Goltix Gold	700	SC	0,5	L/ha	C		
	ADJ	Renol	1000	XL	0,5	L/ha	C		
	HERB	Goltix Gold	700	SC	0,5	L/ha	D		
	ADJ	Renol	1000	XL	0,5	L/ha	D		
14	HERB	Centium 36 CS	360	CS	0,2	L/ha	A		
	HERB	Proman	500	SC	0,5	L/ha	A		
	HERB	Goltix Gold	700	SC	0,5	L/ha	B		
	ADJ	Renol	1000	XL	0,5	L/ha	B		
	PROD	Megafof	1000	XL	2	L/ha	B		
	HERB	Goltix Gold	700	SC	0,5	L/ha	C		
	ADJ	Renol	1000	XL	0,5	L/ha	C		
	PROD	Megafof	1000	XL	2	L/ha	C		
	HERB	Goltix Gold	700	SC	0,5	L/ha	D		
	ADJ	Renol	1000	XL	0,5	L/ha	D		
PROD	Megafof	1000	XL	2	L/ha	D			

Replications: 4, Untreated treatments: 1, Design: Randomized Complete Block (RCB), Treatment units: Treated 'Plot' experimental unit size, Dry Form. Unit: %, Treated 'Plot' experimental unit size Width: 4 meters, Treated 'Plot' experimental unit size Length: 6 meters, Application amount: 200 L/ha, Mix size: 1.92 L, Format definitions: G-All7.def, G-All7.frm

Trial Comments

Goltix Gold i spinat.
 Trial ID: 23429
 Protocol ID: 23429 Location: Flakkebjerg Trial Year: 2023
 Project ID: Project ID 2: Project ID 3:
 Study Director: Peter Hartvig Sponsor Contact:
 Investigator: Andrius Hansen Kemezys

Trial Map Treatment Description

Trt	Code	Description
1	CHK	Untreated Check
2		Centium 36 CS 0.2 L/ha;Proman .5 L/ha
3		Goltix Gold 0.25 L/ha
4		Goltix Gold 0.5 L/ha
5		Goltix Gold 1 L/ha
6		Goltix Gold 0.25 L/ha;Renol 0.5 L/ha
7		Goltix Gold 0.5 L/ha;Renol 0.5 L/ha
8		Goltix Gold 0.5 L/ha;Renol 0.5 L/ha
9		Goltix Gold 0.5 L/ha
10		Goltix Gold 0.5 L/ha;Renol 0.5 L/ha
11		Goltix Gold 0.5 L/ha;Renol 0.5 L/ha
12		Goltix Gold 0.25 L/ha;Renol 0.5 L/ha
13		Goltix Gold 0.5 L/ha;Renol 0.5 L/ha
14		Goltix Gold 0.5 L/ha;Renol 0.5 L/ha;Megafol 2 L/ha

114 4	214 9	314 1	414 7
113 3	213 13	313 4	413 9
112 7	212 2	312 12	412 14
111 1	211 12	311 5	411 10
110 2	210 10	310 2	410 11
109 5	209 14	309 3	409 6
108 8	208 7	308 13	408 5
107 6	207 5	307 8	407 4
106 11	206 1	306 7	406 3
105 12	205 3	305 11	405 2
104 14	204 6	304 10	404 13
103 10	203 8	303 6	403 12
102 9	202 4	302 9	402 1
101 13	201 11	301 14	401 8

Goltix Gold i spinat.
Trial ID: 23429
Protocol ID: 23429 Location: Flakkebjerg Trial Year: 2023
Project ID: Project ID 2: Project ID 3:
Study Director: Peter Hartvig Sponsor Contact:
Investigator: Andrius Hansen Kemezys

General Trial Information

Study Director: Peter Hartvig
Investigator: Andrius Hansen Kemezys

Discipline: H herbicide
Status: E established

ARM Trial Created On: 31-3-2023

Trial Location

City: Flakkebjerg

Latitude of LL Corner °: 55,324667 N

Longitude of LL Corner °: 11,384883 E

Conclusions:**Konklusion 23429: Screeningsforsøg i spinat**

Forsøget blev udført på forskningscentret AU Flakkebjerg. Forsøget har til formål at undersøge selektiviteten af Goltix Gold, når der behandles på forskellige udviklingstrin og i forskellige doseringer samt split behandlinger, på spinat til frø. Forsøget blev etableret i dampbehandlede parceller, for at undgå konkurrence fra ukrudt. Forsøget er ligeledes etableret på 2 tidspunkter, så det har været muligt at behandle samme dag så behandlingen kunne udføres på 2 forskellige udviklingstrin.

Forsøget blev behandlet ved 3 forskellige behandlingstidspunkter. Behandling A som var en grundbehandling, med 0,2 L Centium 36 CS + 0,5 L Proman/ha, blev udført 29. april, før spinatens fremspiring, denne behandling er udført i alle forsøgs leddene. Behandling B blev udført 22. maj, da den senest såede spinat var i stadie 10-12 BBCH, og den tidligt såede spinat var i stadie 14 BBCH. C behandlingen 1 uge senere 31. maj, da spinaten var henholdsvis i stadie 12 og 18 BBCH og D behandlingen 1 uge senere igen 7. juni, da spinaten var henholdsvis i stadie 18 og 31 BBCH. Forsøget blev bedømt for skade på spinat 4 gange, ultimo maj, primo juni, medio juni og ultimo juni.

Ved første bedømmelse for skade på spinat ultimo maj, 4 DA.E. B behandlingen, viste alle led signifikant skade i forhold til ubehandlet. Skade niveauet er det samme, uanset om der er behandlet på stadie 10-12 BBCH eller i stadie 14 BBCH, der er en tendens til at jo højere doseringen af Goltix Gold og hvor der er tilsat Renol til behandlingen er skaden størst 25-40% skade.

Ved anden bedømmelse for skade på spinat primo juni, 1 DA.E. C behandlingen, er skaden på samme niveau eller stigende. I led 2 0,2 L Centium 36 CS + 0,5 L Proman/ha er skaden signifikant lavest, både på den tidlige behandling af afgrøden og den sene behandling af afgrøden. Igen er der tendens til at jo højere doseringen af Goltix Gold og hvor der er tilsat Renol til behandlingen er skaden størst, 48-64% skade hvor bedømmelsen er fortaget efter behandlingen på det tidlige udviklingstrin, og 36-59% skade hvor bedømmelsen er fortaget efter behandlingen på det sene udviklingstrin.

Ved tredje bedømmelse for skade på spinat medio juni, 5 DA.E. D behandlingen, er skaden signifikant kraftigst i led 11, 12, 13 og 14, disse led er også behandlet på D tidspunktet. Hvor bedømmelsen er fortaget efter behandlingen på det tidlige udviklings tidspunkt er skaden næsten total 71-89% skade, hvor bedømmelsen er fortaget efter behandlingen på det sene udviklings tidspunkt er skaden meget kraftig 54-75% skade.

Ved fjerde bedømmelse for skade på spinat ultimo juni, 19 DA.E. D behandlingen, er skaden kraftigst i led 10, 11, 12, 13 og 14. Hvor bedømmelsen er fortaget efter behandlingen på det tidlige udviklings tidspunkt er skaden meget kraftig 55-80% skade, hvor bedømmelsen er fortaget efter behandlingen på det sene udviklings tidspunkt er skaden kraftig 34-64% skade. I de andre behandlet led er skaderne noget mere moderate, hvor bedømmelsen er fortaget efter behandlingen på det tidlige udviklings tidspunkt er skaden 11-30% skade, hvor bedømmelsen er fortaget efter behandlingen på det sene udviklings tidspunkt er skaden 10-39% skade. I led 2 som kun er grundbehandlet med 0,2 L Centium 36 CS + 0,5 L Proman/ha, er der stort set ingen skade 0-5%.

Forsøget viser at spinat er noget påvirket af behandling med Goltix Gold, uanset om der behandles på et tidlig udviklingstrin eller på et senere udviklingstrin. Skaden er også stigende med dosering samt antal split behandlinger og hvor der tilsættes Renol til behandlingen er skaderne ligeledes størst. I led 14 hvor der også har været tilsat biostimulans produktet Megafol til behandlingerne, er skaden ikke signifikant mindre, end i led 13 hvor der ikke har været tilsat Megafol.

Contacts

Role: STYDIR study director
Study Director: Peter Hartvig
Organization: Department of Agroecology
Address 1: Forsøgsvej 1 **Phone No.:** +4587158203 **Mobile No.:** +4522283301
Country: DNK Denmark
City: 4200 Slagelse
Role: INVEST investigator
Investigator: Andrius Hansen Kemezys

Crop Description

Crop 1: C SPQOL Spinacia oleracea Spinach **BBCH Scale:** BVNH
Entry Date: 17-7-2023 **Stage Scale:** BBCH

Site and Design
Treated Plot Width: 4 m
Treated Plot Length: 6 m
Treated Plot Area: 24,0 m²
Replications: 4 **Treatments:** 14 **Plots:** 56 **Study Design:** RACOB (Randomized Complete Block (RCB))
Distance between Blocks: 1 m
Distance between 'Plot' Experimental Units: 0,5 m

Application Description

	A	B	C	D
Date	29-4-2023	22-5-2023	31-5-2023	7-6-2023
Start Time	11:40	16:50	13:15	14:10
Stop Time	12:00	17:30	13:45	14:50
Interval to Prev. Appl.		23 DAYS	9 DAYS	7 DAYS
Method	SPRAY	SPRAY	SPRAY	SPRAY
Applied By	AHK	AHK	AHK	AHK
Entry Date	19-6-2023	19-6-2023	19-6-2023	19-6-2023
Air Temperature Start, Stop	-; 9,8 C	-; 21,7 C	-; 19,6 C	-; 22 C
% Relative Humidity Start, Stop	-; 37,7	-; 2	-; 42	-; 45
Wind Velocity+Dir. Start	6,4 MPS; NW	6 MPS; W	3,3 MPS; NW	2,5 MPS; SW
Wet Leaves (Y/N)	N; no	N; no	N; no	N; no
Soil Temperature	9 C	23,9 C	20,9 C	22,8 C
Soil Moisture	DRY	DRY	DRY	SLIWET
% Cloud Cover	20	40	70	15

Crop Stage At Each Application

	A	B	C	D
Crop 1 Code, BBCH Scale	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH
Stage Majority, Percent	3; -	10-12; -	12; -	16-18; -
Stage Maximum, Percent		14; -	18; -	31; -
Height Average			6 cm	
Coverage	0 %	8 %	8 %	10 %

Application Equipment				
	A	B	C	D
Equipment Name	Selvkørende	Selvkørende	Selvkørende	Selvkørende
Equipment Type	SPRAYE	SPRAYE	SPRAYE	SPRAYE
Operation Pressure	3,7 BAR	3,7 BAR	3,7 BAR	3,7 BAR
Nozzle Model	LD015-110	LD015-110	LD015-110	LD015-110
Nozzle Type	Hardi	Hardi	Hardi	Hardi
Nozzle Spacing	50,0 cm	50,0 cm	50,0 cm	50,0 cm
Nozzles/Row	5,0	5,0	5,0	5,0
Nozzle Calibration	50 cm	50 cm	50 cm	50 cm
Band Width	50,0 0	50,0 0	50,0 0	50,0 0
Boom Length	2,5 m	2,5 m	2,5 m	2,5 m
Boom Height	50,0 cm	50,0 cm	50,0 cm	50,0 cm
Ground Speed	3,6 KPH	3,6 KPH	3,6 KPH	3,6 KPH
Incorporation Equip.	50	50	50	50
Hours to Incorp.	0,0	0,0	0,0	0,0
Incorp. Depth	0 -	0 -	0 -	0 -
Application Amount	200 WATER	200 WATER	200 WATER	200 WATER
Mix Size	3,0 liters	3,0 liters	3,0 liters	3,0 liters

Notes			
Context	Date	By	Notes
STATUS	31-3-2023	Andrius Hansen Kemezys	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	26-5-2023	Andrius Hansen Kemezys	Automatically added by ARM: Status changed to: E: changed by (XDAKEA).
STATUS	26-5-2023	Andrius Hansen Kemezys	Automatically added by ARM: Trial Status updated to 'E' when Rating Date entered.

Goltix Gold i spinat.

Trial ID: 23429

Protocol ID: 23429 Location: Flakkebjerg Trial Year: 2023

Project ID: Project ID 2: Project ID 3:

Study Director: Peter Hartvig

Sponsor Contact:

Investigator: Andrius Hansen Kemezs

Assessed By		26-5-2023	26-5-2023	1-6-2023	1-6-2023	12-6-2023	12-6-2023	26-6-2023
Rating Date		Store spinat	Små spinat	Store spinat	Små spinat	Store spinat	Små spinat	Store spinat
SE Description								
Part Rated								
Rating Type		PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN
Rating Unit/Min/Max		%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100
Number of Subsamples		1	1	1	1	1	1	1
Crop Type, Code		C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
BBCH Scale		BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH
Crop Name		Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach
Crop Stage Scale		B BCH	B BCH	B BCH	B BCH	B BCH	B BCH	B BCH
Crop Stage Majority/Min/Max		16; -; -	12; -; -	16; -; -	12; -; -	59; -; -	16; -; -	59; -; -
Days After First/Last Applic.		27; 4	27; 4	33; 1	33; 1	44; 5	44; 5	58; 19
Trt-Eval Interval		4 DA-B	4 DA-B	1 DA-C	1 DA-C	5 DA-D	5 DA-D	19 DA-D
Number of Decimals		0	0	0	0	0	0	0
Trt Treatment	Rate Appl Appl							
No. Name	Rate Unit Code Timing							
1	Untreated Check	0	0	0	0	0	0	0
2	Centium 36 CS Proman	0,2 L/ha A 0,5 L/ha A	13 e 20 d	20 f	18 e	3 e	15 e	5 e
3	Centium 36 CS Proman Goltix Gold	0,2 L/ha A 0,5 L/ha A 0,25 L/ha B	14 e 26 cd	38 de	43 d	19 d	31 cd	10 de
4	Centium 36 CS Proman Goltix Gold	0,2 L/ha A 0,5 L/ha A 0,5 L/ha B	23 cde 28 bcd	45 a-e	46 cd	25 d	34 cd	19 cde
5	Centium 36 CS Proman Goltix Gold	0,2 L/ha A 0,5 L/ha A 1 L/ha B	23 cde 31 a-d	43 cde	53 a-d	26 d	38 cd	19 cde
6	Centium 36 CS Proman Goltix Gold Renol	0,2 L/ha A 0,5 L/ha A 0,25 L/ha B 0,5 L/ha B	25 cd 30 a-d	46 a-e	50 bcd	23 d	24 de	13 cde
7	Centium 36 CS Proman Goltix Gold Renol	0,2 L/ha A 0,5 L/ha A 0,5 L/ha B 0,5 L/ha B	39 a 40 a	56 abc	61 abc	34 cd	40 c	21 cde
8	Centium 36 CS Proman Goltix Gold Renol	0,2 L/ha A 0,5 L/ha A 1 L/ha B 0,5 L/ha B	40 a 40 a	59 a	64 ab	30 cd	39 cd	16 cde
9	Centium 36 CS Proman Goltix Gold Goltix Gold	0,2 L/ha A 0,5 L/ha A 0,5 L/ha B 0,5 L/ha C	19 de 29 a-d	44 b-e	49 bcd	41 c	41 c	39 bc
10	Centium 36 CS Proman Goltix Gold Renol Goltix Gold Renol	0,2 L/ha A 0,5 L/ha A 0,5 L/ha B 0,5 L/ha B 0,5 L/ha C 0,5 L/ha C	35 ab 39 ab	49 a-e	66 a	54 b	75 ab	34 bcd
11	Centium 36 CS Proman Goltix Gold Goltix Gold Goltix Gold	0,2 L/ha A 0,5 L/ha A 0,5 L/ha B 0,5 L/ha C 0,5 L/ha D	14 e 25 cd	36 e	48 cd	54 b	71 b	34 bcd
12	Centium 36 CS Proman Goltix Gold Renol Goltix Gold Renol Goltix Gold Renol	0,2 L/ha A 0,5 L/ha A 0,25 L/ha B 0,5 L/ha B 0,25 L/ha C 0,5 L/ha C 0,25 L/ha D 0,5 L/ha D	28 bcd 31 a-d	45 a-e	51 bcd	64 ab	78 ab	51 ab

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Untreated treatment(s) 1 excluded from analysis.

^Calculated from residual.

Assessed By	26-5-2023	26-5-2023	1-6-2023	1-6-2023	12-6-2023	12-6-2023	26-6-2023
Rating Date	Store spinat	Små spinat	Store spinat	Små spinat	Store spinat	Små spinat	Store spinat
SE Description							
Part Rated							
Rating Type	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100
Number of Subsamples	1	1	1	1	1	1	1
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach
Crop Stage Scale	BBCH						
Crop Stage Majority/Min/Max	16; -; -	12; -; -	16; -; -	12; -; -	59; -; -	16; -; -	59; -; -
Days After First/Last Applic.	27; 4	27; 4	33; 1	33; 1	44; 5	44; 5	58; 19
Trt-Eval Interval	4 DA-B	4 DA-B	1 DA-C	1 DA-C	5 DA-D	5 DA-D	19 DA-D
Number of Decimals	0	0	0	0	0	0	0
Trt Treatment							
No. Name							
Rate Appl							
Appl Code							
Timing							
13 Centium 36 CS	0,2 L/ha A						
Proman	0,5 L/ha A						
Goltix Gold	0,5 L/ha B						
Renol	0,5 L/ha B						
Goltix Gold	0,5 L/ha C						
Renol	0,5 L/ha C						
Goltix Gold	0,5 L/ha D						
Renol	0,5 L/ha D						
14 Centium 36 CS	0,2 L/ha A						
Proman	0,5 L/ha A						
Goltix Gold	0,5 L/ha B						
Renol	0,5 L/ha B						
Megafol	2 L/ha B						
Goltix Gold	0,5 L/ha C						
Renol	0,5 L/ha C						
Megafol	2 L/ha C						
Goltix Gold	0,5 L/ha D						
Renol	0,5 L/ha D						
Megafol	2 L/ha D						
LSD P=.05	7,0	7,5	9,2	9,5	10,3	11,0	17,6
CV	18,83	16,69	14,17	12,88	18,02	15,05	42,48
Shapiro-Wilk^	0,9808	0,9747	0,9489*	0,9809	0,9496*	0,9819	0,9671
P(Shapiro-Wilk)^	0,5623	0,3308	0,0261*	0,5661	0,028*	0,61	0,1589
Replicate F	4,626	4,894	1,008	0,190	0,960	2,801	1,460
Replicate Prob(F)	0,0078	0,0059	0,4003	0,9022	0,4224	0,0537	0,2416
Treatment F	15,367	5,382	10,456	14,678	37,984	43,490	8,836
Treatment Prob(F)	0,0001	0,0001	0,0001	0,0001	0,0001	0,0001	0,0001

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
 Untreated treatment(s) 1 excluded from analysis.
 ^Calculated from residual.

Assessed By				
Rating Date			26-6-2023	
SE Description			Små spinat	
Part Rated				
Rating Type			PHYGEN	
Rating Unit/Min/Max			%; 0; 100	
Number of Subsamples			1	
Crop Type, Code			C; SPQOL	
BBCH Scale			BVNH	
Crop Name			Spinach	
Crop Stage Scale				
Crop Stage Majority/Min/Max			16; -; -	
Days After First/Last Applic.			58; 19	
Trt-Eval Interval			19 DA-D	
Number of Decimals			0	
Trt No.	Treatment Name	Rate	Appl Unit	Appl Code Timing
1	Untreated Check			0
2	Centium 36 CS Proman	0,2 L/ha 0,5 L/ha	A A	0 e
3	Centium 36 CS Proman Goltix Gold	0,2 L/ha 0,5 L/ha 0,25 L/ha	A A B	11 de
4	Centium 36 CS Proman Goltix Gold	0,2 L/ha 0,5 L/ha 0,5 L/ha	A A B	14 de
5	Centium 36 CS Proman Goltix Gold	0,2 L/ha 0,5 L/ha 1 L/ha	A A B	24 d
6	Centium 36 CS Proman Goltix Gold Renol	0,2 L/ha 0,5 L/ha 0,25 L/ha 0,5 L/ha	A A B B	11 de
7	Centium 36 CS Proman Goltix Gold Renol	0,2 L/ha 0,5 L/ha 0,5 L/ha 0,5 L/ha	A A B B	19 de
8	Centium 36 CS Proman Goltix Gold Renol	0,2 L/ha 0,5 L/ha 1 L/ha 0,5 L/ha	A A B B	33 d
9	Centium 36 CS Proman Goltix Gold Goltix Gold	0,2 L/ha 0,5 L/ha 0,5 L/ha 0,5 L/ha	A A B C	30 d
10	Centium 36 CS Proman Goltix Gold Renol Goltix Gold Renol	0,2 L/ha 0,5 L/ha 0,5 L/ha 0,5 L/ha 0,5 L/ha 0,5 L/ha	A A B B C C	60 bc
11	Centium 36 CS Proman Goltix Gold Goltix Gold Goltix Gold	0,2 L/ha 0,5 L/ha 0,5 L/ha 0,5 L/ha 0,5 L/ha	A A B C D	55 c
12	Centium 36 CS Proman Goltix Gold Renol Goltix Gold Renol Goltix Gold Renol	0,2 L/ha 0,5 L/ha 0,25 L/ha 0,5 L/ha 0,25 L/ha 0,5 L/ha 0,25 L/ha 0,5 L/ha	A A B B C C D D	68 abc

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Untreated treatment(s) 1 excluded from analysis.

^Calculated from residual.

Assessed By			
Rating Date			26-6-2023
SE Description			Små spinat
Part Rated			
Rating Type			PHYGEN
Rating Unit/Min/Max			%; 0; 100
Number of Subsamples			1
Crop Type, Code			C; SPQOL
BBCH Scale			BVNH
Crop Name			Spinach
Crop Stage Scale			
Crop Stage Majority/Min/Max			16; -; -
Days After First/Last Applic.			58; 19
Trt-Eval Interval			19 DA-D
Number of Decimals			0
Trt No.	Treatment Name	Rate	Appl Unit Code Timing
13	Centium 36 CS	0,2 L/ha	A 80 a
	Proman	0,5 L/ha	A
	Goltix Gold	0,5 L/ha	B
	Renol	0,5 L/ha	B
	Goltix Gold	0,5 L/ha	C
	Renol	0,5 L/ha	C
	Goltix Gold	0,5 L/ha	D
	Renol	0,5 L/ha	D
14	Centium 36 CS	0,2 L/ha	A 76 ab
	Proman	0,5 L/ha	A
	Goltix Gold	0,5 L/ha	B
	Renol	0,5 L/ha	B
	Megafol	2 L/ha	B
	Goltix Gold	0,5 L/ha	C
	Renol	0,5 L/ha	C
	Megafol	2 L/ha	C
	Goltix Gold	0,5 L/ha	D
	Renol	0,5 L/ha	D
	Megafol	2 L/ha	D
LSD P=.05			14,5
CV			27,47
Shapiro-Wilk^			0,989
P(Shapiro-Wilk)^			0,9092
Replicate F			1,159
Replicate Prob(F)			0,3389
Treatment F			29,107
Treatment Prob(F)			0,0001

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
 Untreated treatment(s) 1 excluded from analysis.
 ^Calculated from residual.

Goltix Gold i spinat.

Trial ID: 23429

Protocol ID: 23429 Location: Flakkebjerg Trial Year: 2023

Project ID: Project ID 2: Project ID 3:

Study Director: Peter Hartvig Sponsor Contact:

Investigator: Andrius Hansen Kemezys

Rating Type

PHYGEN = phytotoxicity - general / injury

Rating Unit/Min/Max

%, 0, 100 = percent

Crop Type, Code

C = EPPO species (Bayer) codes

SPQOL, BVNH, Spinacia oleracea, Spinach = US

Crop Stage Scale

BBCH = BBCH uniform plant stages

Crop Stage Majority/Min/Max

16 = 6th true leaf unfolded

12 = 2nd true leaf unfolded

59 = First flower petals visible; flowers stillclosed

Goltix Gold i spinat.
 Trial ID: 23429
 Protocol ID: 23429 Location: Flakkebjerg Trial Year: 2023
 Project ID: Project ID 2: Project ID 3:
 Study Director: Peter Hartvig Sponsor Contact:
 Investigator: Andrius Hansen Kemezys

Rating Date	26-5-2023	26-5-2023	1-6-2023	1-6-2023	12-6-2023	12-6-2023	26-6-2023	26-6-2023		
SE Description	Store spinat	Små spinat	Store spinat	Små spinat	Store spinat	Små spinat	Store spinat	Små spinat		
Rating Type	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN		
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100		
Number of Subsamples	1	1	1	1	1	1	1	1		
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL		
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH		
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach		
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH		
Crop Stage Majority/Min/Max	16; -; -	12; -; -	16; -; -	12; -; -	59; -; -	16; -; -	59; -; -	16; -; -		
Days After First/Last Applic.	27; 4	27; 4	33; 1	33; 1	44; 5	44; 5	58; 19	58; 19		
Trt-Eval Interval	4 DA-B	4 DA-B	1 DA-C	1 DA-C	5 DA-D	5 DA-D	19 DA-D	19 DA-D		
Number of Decimals	0	0	0	0	0	0	0	0		
Data Entry Date	26-5-2023	26-5-2023	1-6-2023	1-6-2023	19-6-2023	19-6-2023	26-6-2023	26-6-2023		
Trt Treatment	Rate Appl									
No. Name	Rate Unit Timing Plot									
1 Untreated Check	111 206 314 402 Mean =	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0		
2 Centium 36 CS Proman	0.2 L/ha 0.5 L/ha	110 212 310 405 Mean =	10 20 10 20 13	10 30 20 20 20	0 30 20 20 18	0 10 0 0 3	10 30 20 0 15	20 0 0 0 5	0 0 0 0 0	
3 Centium 36 CS Proman Goltix Gold	0.2 L/ha 0.5 L/ha 0.25 L/ha	113 205 309 406 Mean =	10 20 15 25 14	25 35 20 25 26	40 35 40 35 38	40 45 45 40 43	35 10 20 10 19	40 30 35 20 31	20 10 10 0 10	15 30 0 0 11
4 Centium 36 CS Proman Goltix Gold	0.2 L/ha 0.5 L/ha 0.5 L/ha	114 202 313 407 Mean =	20 20 30 20 23	20 30 25 35 28	45 40 50 45 45	45 45 50 45 46	40 20 20 20 25	40 30 30 35 34	25 10 30 10 19	10 10 30 5 14
5 Centium 36 CS Proman Goltix Gold	0.2 L/ha 0.5 L/ha 1 L/ha	109 207 311 408 Mean =	20 20 20 30 23	25 35 25 40 31	40 35 45 50 43	45 50 45 55 53	25 25 25 30 26	30 40 40 40 38	10 10 35 20 19	30 10 25 30 24
6 Centium 36 CS Proman Goltix Gold Renol	0.2 L/ha 0.5 L/ha 0.25 L/ha 0.5 L/ha	107 204 303 409 Mean =	10 30 30 30 25	20 30 30 40 30	45 45 45 60 46	50 50 40 60 50	10 25 25 30 23	10 30 20 35 24	0 10 10 30 13	0 20 20 15 11
7 Centium 36 CS Proman Goltix Gold Renol	0.2 L/ha 0.5 L/ha 0.5 L/ha 0.5 L/ha	112 208 306 414 Mean =	40 35 40 40 39	40 40 40 40 40	60 45 50 70 56	60 55 65 65 61	30 30 25 50 34	45 35 35 45 40	20 0 5 60 21	30 0 25 20 19
8 Centium 36 CS Proman Goltix Gold Renol	0.2 L/ha 0.5 L/ha 1 L/ha 0.5 L/ha	108 203 307 401 Mean =	40 40 40 40 40	40 40 40 40 40	60 55 60 60 59	70 60 65 60 64	25 25 30 40 30	30 45 40 40 39	0 25 20 20 16	35 25 35 35 33
9 Centium 36 CS Proman Goltix Gold Goltix Gold	0.2 L/ha 0.5 L/ha 0.5 L/ha 0.5 L/ha	102 214 302 413 Mean =	10 25 20 20 19	25 35 30 25 29	40 50 40 45 44	45 60 45 45 49	40 45 35 45 41	40 45 35 45 41	30 40 35 50 39	30 35 35 20 30
10 Centium 36 CS Proman Goltix Gold Renol Goltix Gold Renol	0.2 L/ha 0.5 L/ha 0.5 L/ha 0.5 L/ha 0.5 L/ha 0.5 L/ha	103 210 304 411 Mean =	30 40 40 30 35	40 40 40 35 39	45 50 45 55 49	70 70 60 65 65	40 55 55 65 65	70 70 80 80 80	30 20 35 50 34	35 65 70 70 60

Rating Date	26-5-2023	26-5-2023	1-6-2023	1-6-2023	12-6-2023	12-6-2023	26-6-2023	26-6-2023		
SE Description	Store spinat	Små spinat	Store spinat	Små spinat	Store spinat	Små spinat	Store spinat	Små spinat		
Rating Type	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN		
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100		
Number of Subsamples	1	1	1	1	1	1	1	1		
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL		
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH		
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach		
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH		
Crop Stage Majority/Min/Max	16; -; -	12; -; -	16; -; -	12; -; -	59; -; -	16; -; -	59; -; -	16; -; -		
Days After First/Last Appl.	27; 4	27; 4	33; 1	33; 1	44; 5	44; 5	58; 19	58; 19		
Trt Eval Interval	4 DA-B	4 DA-B	1 DA-C	1 DA-C	5 DA-D	5 DA-D	19 DA-D	19 DA-D		
Number of Decimals	0	0	0	0	0	0	0	0		
Data Entry Date	26-5-2023	26-5-2023	1-6-2023	1-6-2023	19-6-2023	19-6-2023	26-6-2023	26-6-2023		
Trt Treatment	Rate Appl									
No. Name	Rate Unit Timing Plot									
11	Centium 36 CS 0,2 L/ha	106	10	30	25	55	55	55	30	65
	Proman 0,5 L/ha	201	10	15	40	40	55	75	35	40
	Goltix Gold 0,5 L/ha	305	10	30	40	50	55	80	35	65
	Goltix Gold 0,5 L/ha	410	25	25	40	45	50	75	35	50
	Goltix Gold 0,5 L/ha									
	Mean =		14	25	36	48	54	71	34	55
12	Centium 36 CS 0,2 L/ha	105	25	25	45	60	60	65	45	65
	Proman 0,5 L/ha	211	30	35	45	50	65	80	50	65
	Goltix Gold 0,25 L/ha	312	30	25	50	45	65	75	65	65
	Renol 0,5 L/ha	403	25	40	40	50	65	90	45	75
	Goltix Gold 0,25 L/ha									
	Renol 0,5 L/ha									
	Goltix Gold 0,25 L/ha									
	Renol 0,5 L/ha									
	Mean =		28	31	45	51	64	78	51	68
13	Centium 36 CS 0,2 L/ha	101	30	30	60	50	75	77	70	70
	Proman 0,5 L/ha	213	35	40	60	55	75	90	70	75
	Goltix Gold 0,5 L/ha	308	30	30	55	60	75	90	65	80
	Renol 0,5 L/ha	404	35	40	55	60	75	97	50	95
	Goltix Gold 0,5 L/ha									
	Renol 0,5 L/ha									
	Goltix Gold 0,5 L/ha									
	Renol 0,5 L/ha									
	Mean =		33	35	58	56	75	89	64	80
14	Centium 36 CS 0,2 L/ha	104	25	30	50	65	70	80	45	70
	Proman 0,5 L/ha	209	40	40	50	60	70	85	40	75
	Goltix Gold 0,5 L/ha	301	30	30	50	60	70	90	50	75
	Renol 0,5 L/ha	412	35	35	55	70	75	90	70	85
	Megafol 2 L/ha									
	Goltix Gold 0,5 L/ha									
	Renol 0,5 L/ha									
	Megafol 2 L/ha									
	Goltix Gold 0,5 L/ha									
	Renol 0,5 L/ha									
	Megafol 2 L/ha									
	Mean =		33	34	51	64	71	86	51	76

Rating Type

PHYGEN = phytotoxicity - general / injury

Rating Unit/Min/Max

%, 0, 100 = percent

Crop Type, CodeC = EPP0 species (Bayer) codes
SPQOL, BVNH, Spinacia oleracea, Spinach = US**Crop Stage Scale**

BBCH = BBCH uniform plant stages

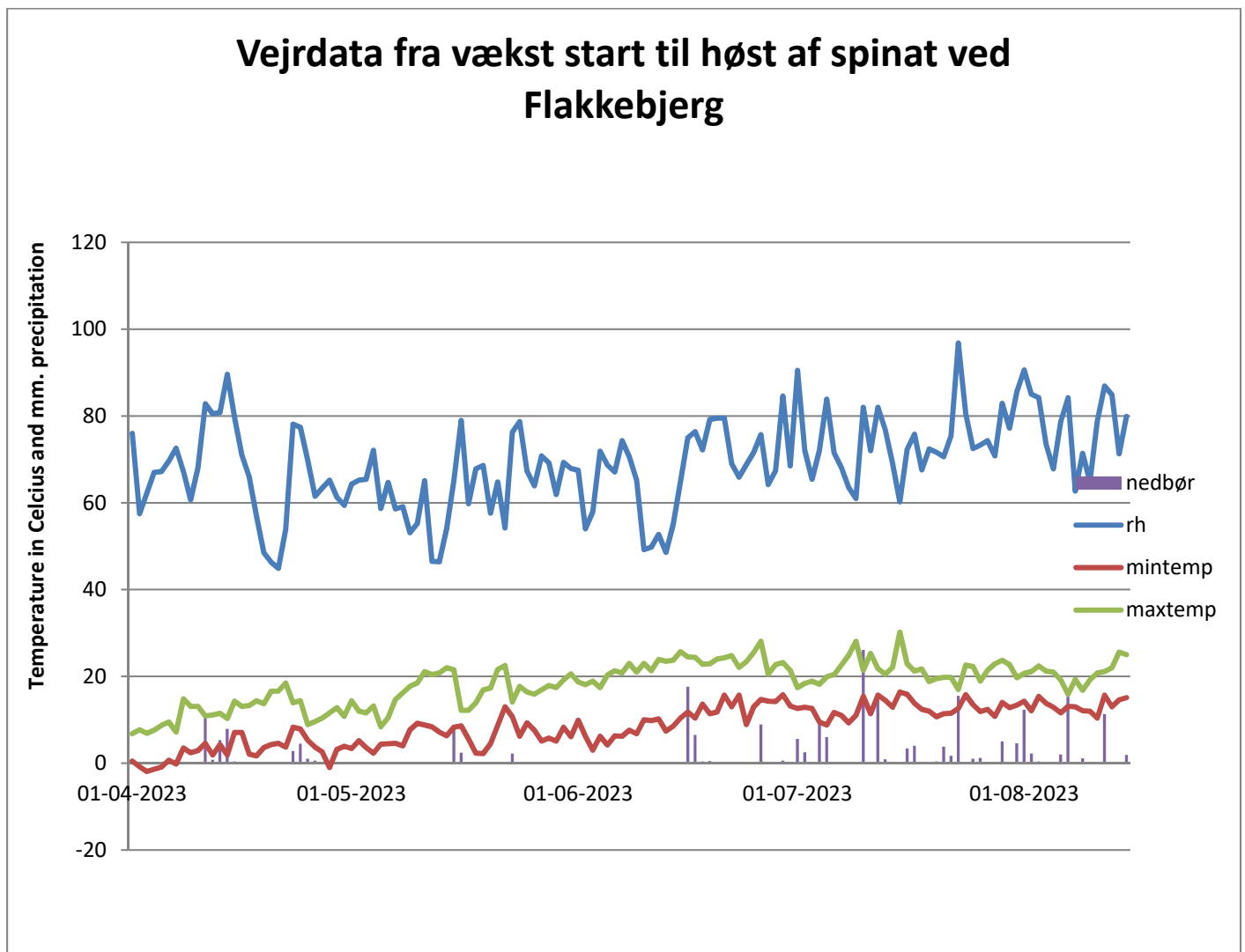
Crop Stage Majority/Min/Max

16 = 6th true leaf unfolded

12 = 2nd true leaf unfolded

59 = First flower petals visible; flowers stillclosed

Bilag 1. Vejrdata



Figur 1. mintemp (minimum temperatur), maxtemp (max temperatur) rh (relativ fugtighed) og nedbør.

Certificate

GEP approval is granted to

Testing unit: Aarhus University
Department of Agroecology (weeds)
Flakkebjerg
DK-4200 Slagelse

The approval applies to the execution of GEP efficacy trials of pesticides within

Testing areas: Field Trials
Fruit growing / Forestry

GEP

The GEP Recognition Unit at the Danish Centre for Food and Agriculture, Aarhus University, controls organisation, staff, premises, trial fields, trial equipment, standard operation procedures and trial reports. The testing unit is subject to continuous control and inspection.

The certificate is valid for a period of 6 years. Expiration date: 31 December 2025

Date of approval: 1 January 2020

Signed: 11 December 2019



Henrik Brødsgaard
Danish Environmental
Protection Agency



Else Thordahl Meyer
Aarhus University



Peter Kryger Jensen
Aarhus University

Regulation 1107/2009 concerning plant protection products and ministerial order no. 815 dated 18 June 2018 from Danish Ministry of the Environment states that investigations of the efficacy of plant protection products carried out in Denmark for registration purposes must be performed by testing units which have been approved to carry out these investigations by the Danish Centre for Food and Agriculture, Aarhus University.