



DEPARTMENT OF AGROECOLOGY
AARHUS UNIVERSITY

Slutrapport over GEP forsøg 21426, 21427-1-2-3, 21428, 21429, og 21443

UKRUDTSBEKÆMPELSE I HAVEFRØ - Herbicidafprøvning ved AU Flakkebjerg 2021



**Andrius Hansen Kemezys
Peter Hartvig**

Marts 2022

Rapport til Frøafgiftsfonden Danmark



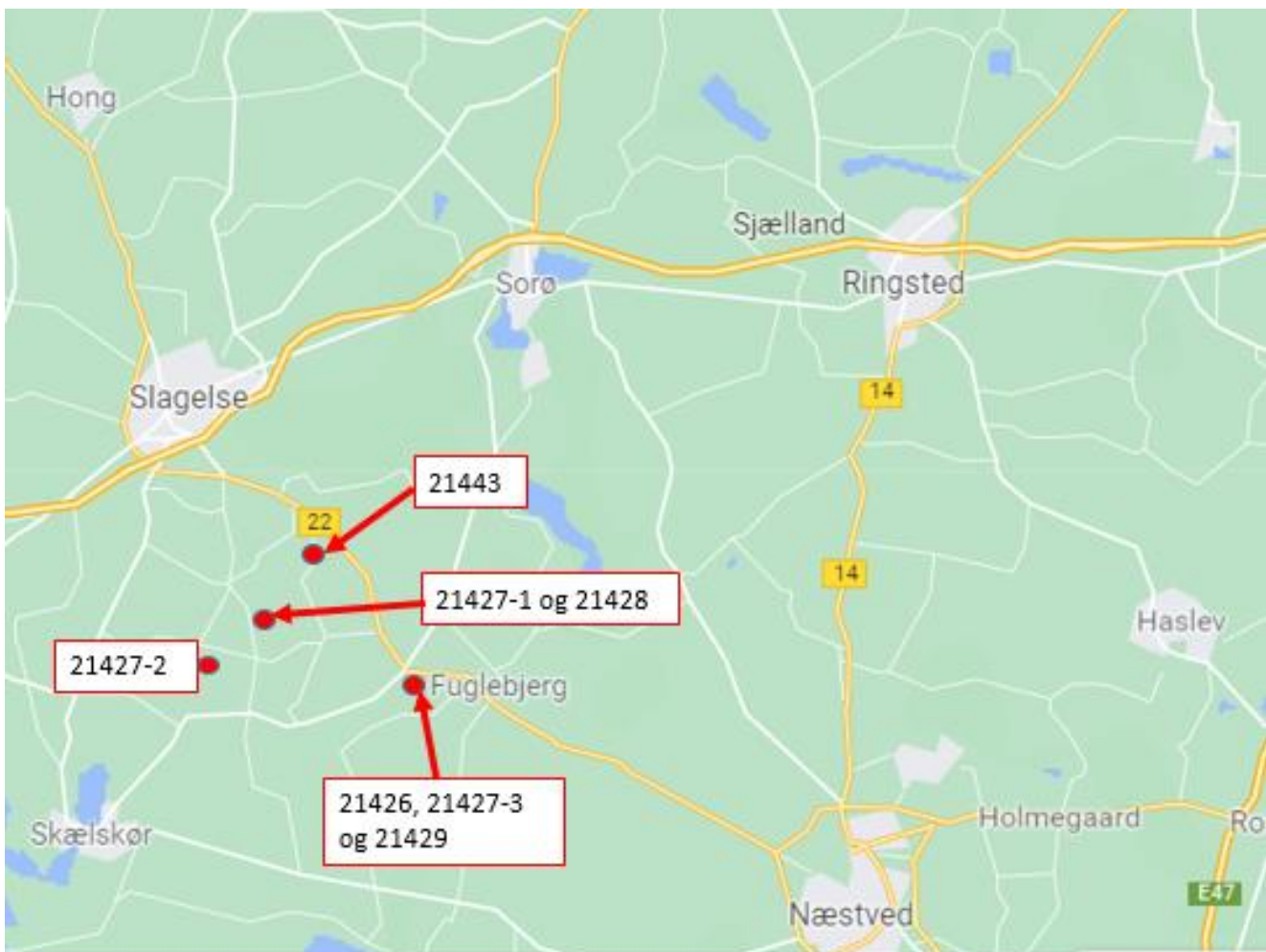
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Forsøgs nr:	21426, 21427-1-2-3, 21428, 21429, og 21443
Antal sider:	94
Lokaliteter:	21427-1 og 21428 hos AU Flakkebjerg 21427-2 i Snekkerup 21426, 21427-3 og 21429 i Lystager Torp 21443 i Vollerup





Udført for: Frøafgiftsfonden
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Finansieret af: Frøafgiftsfonden

Udført af: Aarhus Universitet
Department of Agroecology
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Rådata: Kan rekvireres hos forfatteren

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

23. Marts 2022

Dato

Peter Hartvig



Samlet konklusion

Ukrudtsbekæmpelse i spinat til frø – strategiforsøg

Der blev i 2021 udført 3 markforsøg med ukrudtsbekæmpelsesstrategier i spinat til frø.

Der blev generelt observeret acceptable effekt over for de fleste tokimbladet ukrudt arter i de testede strategier, der er dog meget store variationer mellem de 3 forsøg. Ud fra de 3 forsøg er det meget svært at sige hvilken strategi, som har den bedste effekt over for de tilstedeværende ukrudts arter. Der er dog en tendens til at de bedste effekter er opnået, hvor strategien både indeholder Pixxaro EC og Nortron, men også led 4 hvor der ud over Centium 36 CS + Proman er brugt 2 x Betanal og 1 x Pixxaro EC, er effekten god.

Skadesbedømmelser viste, at især strategier som indeholder både af Pixxaro og Nortron giver nogle ret kraftige skader på afgrøden spinat, især i de 2 af forsøgene er skaderne meget kraftige. De testede led 10, 12 og 13, som alle med forskellige kombinationer af Pixxaro EC og Nortron synes at være meget risikable.

Udbytteresultater i de 3 strategiforsøg kunne ikke vise noget signifikant forskelle i udbytte af de testede herbicidstrategier, på trods af de forholdsvis høje skader. Men især i de 2 forsøg er der noget lavere udbytte, i forhold til ubehandlet, hvor der er anvendt Pixxaro EC og Nortron i strategierne. Der er dog stor variation i udbytte niveauerne mellem de 3 forsøg, så det er svært at udlede noget sikkert.

Der blev udtaget frøprøver, som blev analyseret for spireevne og spirehastighed i januar – marts 2022. Spireanalyserne fra alle tres strategi forsøg viste, at spireevne blev nedsat af de led, som blev behandlet med Nortron og med sent behandling af Pixxaro. Der var signifikante forskelle i 2 af forsøgene, mens der var ikke signifikant tendens til nedsat i den tredje forsøg. Spireevne var generelt på lavere niveau end forventet.

Stress forsøg i spinat

Formålet ved forsøget var at undersøge, om stress på spinat kan forårsage selvbestøvere (selfings) og nedsætte frøkvalitet.

Som forventet har behandlingerne med Pixxaro og Proman skadet spinat. Der var tydelig tendens til, at jo højere dosering af hhv. Pixxaro og Proman var i behandling, jo større skade der var. Tromling så ud til at skade spinat kun i meget kort tid efter behandling, og spinat kunne hurtigt komme sig. Behandlingerne med Pixxaro og Proman resulterede i mere langvarige skader, men spinat synes at kunne komme sig fra skaderne. Ved den sidste bedømmelse for skade den 12. juli var der kun behandling 6 med 0,2 l/ha Pixxaro ved C tidspunkt som var signifikant skadet (25% kulturskade) i forhold til ubehandlet.

Der blev observeret, at de led, som blev behandlet med Pixxaro og Proman blev angrebet af skimmel i mindre grad i forhold til ubehandlet og de tromlede led, dog ikke signifikant. Dette kunne muligvis forklares, at spinatplanter blev forsinket i udvikling på grund af herbicidskader.

Udbytteresultater viste, at der blev målt 1.424 kg/ha spinat frø i ubehandlet. Led 6 med 0,2 l/ha Pixxaro var den, som resulterede i den laveste udbytte af 738 kg/ha (51,8% af det ubehandlet, dog ikke signifikant forskellig fra ubehandlet). De øvrige led med Pixxaro og Proman har også negativt påvirket udbytte, dog i mindre omfang (3-30% reduktion af udbytte i forhold til ubehandlet, ingen signifikante forskelle). Der blev observeret, at led 11 med tromling ved D tidspunkt resulterede i 12% højere udbytte end i ubehandlet. Udbytteresultater viste ingen signifikante forskelle mellem ubehandlet og de øvrige led. Der blev dog observeret signifikant forskel mellem led 6 (0,2 l/ha Pixxaro) og led 11 med tromling ved D tidspunkt.

Analysen for selvbestøvere viste, at alle led med Pixxaro resulterede i højere andel af selvbestøvere (0,27-0,51%) end ubehandlet kontrol (0,12%). Desuden blev der observeret, at der var højere andel af selvbestøvere i de led med højeste dosering af Pixxaro. Behandlingerne med Proman, Tromling og reference behandling med Betanal resulterede i nogenlunde samme andel af selvbestøvere (0,09-0,23%) som i ubehandlet kontrol (0,12%).

Der blev udtaget frøprøver, som blev analyseret for spireevne og spirehastighed i januar – februar 2022. Spireanalyserne fra alle tres strategi stress forsøg viste, at behandlingerne med Pixxaro har nedsat spireevne (3 ud af 4 behandlingerne med Pixxaro viste signifikant lavere spireevne i forhold til ubehandlet; op til 45% nedsat spireevne). Behandlingerne med Proman og mekanisk tromling har ikke påvirket spireevne i forhold til ubehandlet, eller reference behandling med Betanal. Spireevne var generelt på lavere niveau end forventet.

Nedvisning i spinat og purløg

Der blev i alt udført tre forsøg med nedvisning i havefrø i 2021 – to af forsøg blev udført i spinat, og et forsøg i purløg. I det ene spinat forsøg blev der testet midlerne TopGun Finalsan Koncentrat, Mizuki og Mizuki med tilsætning af henholdsvis NS 30-2 eller TopGun Finalsan Koncentrat. I det andet spinat forsøg blev følgende produkter testet; Reglone + NS 30-2, Mizuki og Mizuki med tilsætning af enten NS 30-2, TopGun Finalsan Koncentrat eller AdBlue. Samt Eddikesyre og NaCl alm. køkkensalt. I forsøget med purløg er følgende produkter testet; TopGun Finalsan Koncentrat, Mizuki og Mizuki med tilsætning af enten N30-2, TopGun Finalsan Koncentrat, samt Roundup Bio. I alle forsøgene har Reglone + Agropol været reference produktet.

De to spinatforsøg er udført i samme mark, og flere af de testede produkter er ens. I disse tilfælde er den væsentligste forskel, at behandlingen med Mizuki er i det ene forsøg udført ca. 10 dage før forventet høst og 4 dage før referencebehandlingen med Reglone. I det andet forsøg er alle behandlinger udført 4 dage før forventet høst. I sidstnævnte forsøg har ingen af de afprøvede alternative produkter været på niveau med Reglone 6 og 8 dage efter behandling (kun signifikant 6 dage efter behandling). I det andet forsøg med forskudt behandling har både Mizuki og TopGun Finalsan Koncentrat ligget på niveau med Reglone referencebehandlingen, men generelt har kun få behandlinger (inkl. reference) har været signifikant forskellige fra ubehandlet. Tilsætning af NS 30-2 og især TopGun til Mizuki synes at kunne øge effekt og virkningshastighed i forhold til Mizuki alene, men udlignes over tid.

I purløg forsøg var det kun referenceleddet med 2,0 l/ha Reglone + 0,15 l/ha Agropol der viste acceptabel effekt for nedvisning. De testede produkter TopGun Finalsan Koncentrat, Mizuki og Mizuki med tilsætning af enten N30-2, TopGun Finalsan Koncentrat, samt Roundup Bio, synes ikke at kunne vise noget tilstrækkelig effekt for nedvisning af purløg.

Der blev udført spiringsanalyse af frøprøver for alle nedvisningsforsøg 21426 og 21443. Spiringsanalyserne viste ingen signifikante forskelle i spirehastighed eller spireevne mellem ubehandlet og de testede led eller mellem de testede led indbyrdes. Der bør dog bemærkes, at spireevne niveauet var meget lavt i spinat nedvisningsforsøg (60-75%), mens der var normal spireevne i purløg nedvisnings forsøg (98-100%).

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat strategi forsøg 2021.

Trial ID:21427-1 Location:AU Flakkebjerg Trial Year:2021
 Protocol ID:21427 Investigator (Creator):Andrius Hansen Kemezys
 Project ID:29894 Study Director:Peter Hartvig

General Trial Information

Study Director:Peter Hartvig **Title:**Study director
Investigator:Andrius Hansen Kemezys **Title:**Academic employee

Discipline:H herbicide

Trial Status:F one-year/final

Trial Reliability:HIGH high quality

ARM Trial Created On:25-03-2021

Initiation Date:13-04-2021

Trial Location

City:AU Flakkebjerg **Country:**DNK Denmark
State/Prov.:Slagelse
Postal Code:4200 **Climate Zone:**EPOMAR EPPO Maritime

Latitude of LL Corner °:55,321787 N

Longitude of LL Corner °:11,401661 E

Conducted Under GLP:No

Conducted Under GEP:Yes

Conclusions:

Forsøget blev udført på forskningscentret AU Flakkebjerg. Forsøget har til formål at undersøge effektivitet og selektivitet af forskellige ukrudtsstrategier til spinat til frø. Forsøget blev etableret med todelte parceller, hvor den ene del blev dampbehandlet for at undgå konkurrence fra ukrudt, mens den ikke dampet del af parcellen blev anvendt til registrering af ukrudt.

Vejret i starten af forsøgsperioden kan beskrives som koldt og meget tørt, i maj måneder var nedbørsmængden dog noget over det normale, ca. 125%. Sommermånederne juni og juli var med temperatur lidt over normalen, nedbørsmængden var især i juni meget under normalen 56% lavere. I juli var nedbørsmængden næsten normal, men med store variationer fra landsdel til landsdel.

Forsøget blev behandlet 6 gange: behandling A 5 dage efter såning blev udført den 13. april; og bladsprøjtninger C, D, E, F og G blev udført henholdsvis den 10. 15. 24. og 31. maj samt G behandling den 4. juni. B behandling med Roundup Bio, lige inden fremspiring af spinat blev ikke udført, da der ikke kom noget ukrudt på dette tidspunkt. C behandlingen blev udført den 9. maj, men pga. regn lige efter behandlingen, blev den gentaget igen den 10. maj.

Forsøget blev bedømt for skade 7 gange igennem vækstsæsonen, de sidste bedømmelser var henholdsvis 14 og 24 dage efter G behandlingen, samt 5 uger efter G behandlingen. Effekten på ukrudt er bedømt den 17. juni 13 dage efter G behandlingen.

Tre forskellige ukrudtsarter blev bedømt ved effektregistrering: lægejord røg (FUMOF, *Fumaria officinalis*), burresnerre (GALAP, *Galium aparina*) og rød tvetand (LAMP, *Lamium purpureum*), desuden blev der bedømt andet 2-kimbladet ukrudt (BBBBB).

Resultatet fra effektbedømmelsen 13 dage efter G behandlingen viser, at de fleste strategier virker godt over for de tilstedeværende ukrudtsarter, især rød tvetand hvor effekten er 81-100%. Overfor lægejord røg er effekten dog ikke tilstrækkelig i led; 2, 3, 6, 8 og 11, her er effekten kun 51-78%. Overfor burresnerre er effekten heller ikke tilstrækkelig i led; 2, 3 og 7, her er effekten kun 65-70%. Led 4, 5, 9, 12 og 13 er de led, med den bedste effekt, overfor alle de tilstedeværende ukrudtsarter, 80-100% effekt.

Skadebedømmelserne primo og medio juni, henholdsvis 7 og 14 dage efter G behandlingen, viser at afgrøden er meget påvirket af behandlingerne, kraftige skader. Ved bedømmelsen 7 dage efter G behandlingen 11. juni er der i alle led, på nær led 2 og 8 signifikant større skade i forhold til ubehandlet, der er dog ikke signifikant forskel mellem behandlingerne. Ved bedømmelsen 14 dage efter G behandlingen 18. juni, er skaderne aftagende, i led 10 og 12 er skaderne signifikant større, i forhold til ubehandlet, der er dog ikke signifikant forskel mellem behandlingerne. Ved bedømmelserne 28. juni, 24 dage efter G behandlingen er skaderne næsten forsvundet, ved den sidste bedømmelse 12. juli, 38 dage efter G behandlingen er der næsten ingen synlig skade på afgrøden længere.

Den 22. juli blev der bedømt modenhed af spinat. Led 12 var den, som blev mest forsinket med modning (signifikant forskel med øvrige behandlingerne) efterfulgt af led 10. Det tyder på, at behandlingerne med Nortron skader spinat i meget alvorlig grad, især når det er anvendt ved hhv. E og G tidspunkter frem for D og F. Anvendelse af Nortron på større spinat giver større skade end når det er anvendt på mindre spinat.

Udbyttet i marken er i ubehandlet 2175 kg/ha, hvilket må siges at være ok, udbytte registreringen kunne ikke vise nogen signifikant forskel, mellem leddene, eller i forhold til ubehandlet. I led 6, 7 og 8 er udbyttet på samme niveau eller lidt over udbyttet i ubehandlet. I alle de andre led er udbyttet noget lavere end i ubehandlet, de laveste udbytter er opnået i led 11, 12 og 13 her er udbyttet kun 66-70% af udbyttet i ubehandlet.

Spiringsanalyse for spirehastighed og spireevne har påvist, at der var signifikant nedsat spireevne i led 10, 11 og 12. Der indgår behandlinger med Nortron i led 10 og 12, og sent behandling med Pixxaro i led 11, hvilket kan være årsagen til nedsat spireevne i disse led.

Contacts

Role:STYDIR study director
Study Director:Peter Hartvig **Title:**Study director
Organization:Dept. of Agroecology, Aarhus University
Address 1:Forsøgsvej 1, Flakkebjerg
Address 2:4200
Country:DNK Denmark
City:Slagelse
Role:INVEST investigator
Investigator:Andrius Hansen Kemezyz **Title:**Academic employee
Organization:Aarhus University, Department of Agroecology
Address 1:Forsøgsvej 1, Flakkebjerg
Address 2:4200
Country:DNK Denmark
City:Slagelse

Crop Description

Crop 1:C SPQOL Spinacia oleracea **Spinach** **BBCH Scale:**BVNH
Entry Date:12-01-2022 **Stage Scale:**BBCH
Planting Date:08-04-2021 **Planting Rate:**25 S/m

Pest Description

Pest 1 Type:W **Code:**BBBBB Broad-leaved plants
Common Name:Broad-leaved plants **Stage Scale:**BBCH

Site and Design

Treated Plot Width:2,5 m **Site Type:**FIELD field
Treated Plot Length:10 m **Experimental Unit:**1 PLOT plot
Treated Plot Area:25,0 m2 **Treatments:**13 **Tillage Type:**CONTIL conventional-till
Replications:4 **Study Design:**RACOB� Randomized Complete Block (RCB)

Soil Description

Description Name:Sandy loam
% Sand:66 **% OM:**2,1 **Texture:**SL sandy loam
% Silt:15 **pH:**7,1
% Clay:16

Weather Conditions

Overall Moisture Conditions:NORMAL normal
Closest Weather Station:AU Flakkebjerg **Distance:**500 m

Application Description

	A	B	C	D	E	F	G
Application Date	13-04-2021		10-05-2021	15-05-2021	24-05-2021	31-05-2021	04-06-2021
Appl. Start Time	14:15			12:00	06:40	10:30	11:00
Appl. Stop Time	14:45			12:30	06:55	11:00	11:15
Interval to Prev. Appl.			27 DAYS	5 DAYS	9 DAYS	7 DAYS	4 DAYS
Application Method	SPRAY			SPRAY	SPRAY	SPRAY	SPRAY
Application Timing	PREEM			FIINSP	FIINSP	FIINSP	FIINSP
Application Placement	SOIL			FOLIAR	FOLIAR	FOLIAR	FOLIAR
Applied By	AHK			PEA	AHK	PEA	PEA
Appl. Entry Date	04-08-2021	21-12-2021		04-08-2021	04-08-2021	04-08-2021	04-08-2021
Air Temperature Start, Stop	-; 6,9 C	-; - C		-; 9,2 C	-; 10,4 C	-; 18,9 C	-; 16 C
% Relative Humidity Start, Stop	-; 56,8			-; 88	-; 82	-; 64	-; 90
Wind Velocity+Dir. Start	4,5 MPS; W			4,8 MPS; -	2,2 MPS; S	3,9 MPS; NW	3,5 MPS; E
Wet Leaves (Y/N)				N; no	Y; yes	N; no	N; no
Soil Temperature	7,4 C			11,1 C	9,6 C	13 C	15 C
Soil Moisture	SLIWET			WET	DRY	DRY	WET
% Cloud Cover	70			100	25	0	100

Comment:

B (Roundup Bio) sprøjtning blev ikke udført, da der var ingen ukrudt ved fremspiring af spinat. Lige efter C sprøjtning kom der lidt regn, derfor blev der besluttet at gentage C sprøjtning den 10. maj.

Crop Stage At Each Application							
	A	B	C	D	E	F	G
Crop 1 Code, BBCH Scale	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH
Stage Majority, Percent	00; -		10-11; -	12; -	14; -	16; -	18; -

Pest Stage At Each Application							
	A	B	C	D	E	F	G
Pest 1 Code, Type, Scale	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH
	G						
Pest 1 Code, Type, Scale	BBBBB; W; BBCH						

Application Equipment							
	A	B	C	D	E	F	G
Appl. Equipment	Selvkørende		Selvkørende	Selvkørende	Selvkørende	Selvkørende	Selvkørende
Equipment Type	SPRAYE		SPRAYE	SPRAYE	SPRAYE	SPRAYE	SPRAYE
Operation Pressure	3.8 BAR		3.8 BAR	3.8 BAR	3.8 BAR	3.8 BAR	3.8 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 cm	50 cm	50 cm	50 cm	50 cm
Nozzles/Row	5		5	5	5	5	5
Boom Length	2.5 m		25 m	25 m	25 m	25 m	25 m
Boom Height	50 cm		50 cm	50 cm	50 cm	50 cm	50 cm
Ground Speed	3,6 KPH		3,6 KPH	3,6 KPH	3,6 KPH	3,6 KPH	3,6 KPH
Application Amount	200 L/ha		200 L/ha	200 L/ha	200 L/ha	200 L/ha	200 L/ha
Mix Size	4 liters		4 liters	4 liters	4 liters	4 liters	4 liters

Notes			
Context	Date	By	Notes
STATUS	25-03-2021	Andrius Hansen Kemezys	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	04-08-2021	Andrius Hansen Kemezys	Automatically added by ARM: Trial Status updated to 'E' when Rating Date entered.

SE Definitions					
	1.	2.	3.	4.	5.
Rating Timing	A1				
SE Name	O007	W006	W003	X001	Y207_C2
SE Description	Count of plants	% Ground cover of weeds	% weed control	% General phyto on plants (all symptoms)	Seed yield per ha (gross yield). Formula: ([Y207A]/plot size in m2)*10000
Part Rated	PLANT; -	PLANT; -	PLANT; -	PLANT; -	SEED; -
Rating Type	COUPLA	GROUND	CONTRO	PHYGEN	YIEGRO
Rating Unit/Min/Max	NUMBER; -; -	%; -; -	%; -; -	%; -; -	KG/HA; -; -
Sample Size	- M2	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Reporting Basis	- M2	1 PLOT	1 PLOT	1 PLOT	1 HA
Calculation	IN	NC	NC	NC	IN
Number of Sub-samples					1
ARM Action Codes					@YLDKKGK[1]

Instructions:**Registreringer:**

Timing	Nr.	Registreringer (ARM code)
Ved beh. D	1, 5	BBCH, PHYGEN
Ved beh. E	1, 2, 3, 4, 5	BBCH, CONTRO, GROUND, COUPLA, PHYGEN
2 uger efter E	1, 2, 3, 4, 5	BBCH, CONTRO, GROUND, COUPLA, PHYGEN
4 uger efter E	1, 2, 3, 4, 5	BBCH, CONTRO, GROUND, COUPLA, PHYGEN
Ved høst	6	YIEGRO

Nr	ARM code	SE name	Beskrivelse
1	BBCH		BBCH for afgrøde og ukrudt.
2	CONTRO	W003	Effekt på ukrudt. Effekt bedømmes som udgangspunkt ved at sammenligne hver parcel til ubehandlet, dog kan den første bedømmelse for ukrudtsdækning bruges. Der bedømmes artsvis for alle ukrudt med densitet over 5 planter/m2 .
3	GROUND	W006	% dækning af hver ukrudsart med densitet over 5 planter/m2 i ubehandlede parceller .
4	COUPLA	O007	Ukrudtsdensitet for hver art over 5 planter/m2 i ubehandlede parceller . Ukrudtsdensitet estimeres som planter/m2.
5	PHYGEN	X001	Skade på afgrøder (%).
6	YIEGRO	Y207_C2	Brutto og netto udbytte i kg/ha

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat strategi forsøg 2021.

Trial ID:21427-1 Location:AU Flakkebjerg Trial Year:2021
 Protocol ID:21427 Investigator (Creator):Andrius Hansen Kemezys
 Project ID:29894 Study Director:Peter Hartvig
 Sponsor Contact:

Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Appl Code	Appl Description	Appl Amount	Amount Unit
1	CHK	Untreated Check									
2	HERB	Centium 36 CS	360gA/L	CS		0,15L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Roundup Bio	360gA/L	SC		1,5L/ha	B		Lige inden fremspiring	200L/ha	
	HERB	Betanal	160gA/L	SC		1L/ha	C		BBCH 10	200L/ha	
	HERB	Betanal	160gA/L	SC		1L/ha	D		1 WA-C (BBCH 12)	200L/ha	
3	HERB	Centium 36 CS	360gA/L	CS		0,15L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Proman	500gA/L	SC		0,5L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Roundup Bio	360gA/L	SC		1,5L/ha	B		Lige inden fremspiring	200L/ha	
	HERB	Betanal	160gA/L	SC		1L/ha	C		BBCH 10	200L/ha	
	HERB	Betanal	160gA/L	SC		1L/ha	D		1 WA-C (BBCH 12)	200L/ha	
4	HERB	Centium 36 CS	360gA/L	CS		0,15L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Proman	500gA/L	SC		0,5L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Roundup Bio	360gA/L	SC		1,5L/ha	B		Lige inden fremspiring	200L/ha	
	HERB	Betanal	160gA/L	SC		1L/ha	C		BBCH 10	200L/ha	
	HERB	Betanal	160gA/L	SC		1L/ha	D		1 WA-C (BBCH 12)	200L/ha	
	HERB	Pixxaro EC	305gA/L	EC		0,125L/ha	E		1 WA-D (BBCH 14)	200L/ha	
5	HERB	Centium 36 CS	360gA/L	CS		0,15L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Proman	500gA/L	SC		0,5L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Roundup Bio	360gA/L	SC		1,5L/ha	B		Lige inden fremspiring	200L/ha	
	HERB	Pixxaro EC	305gA/L	EC		0,05L/ha	C		BBCH 10	200L/ha	
	HERB	Pixxaro EC	305gA/L	EC		0,075L/ha	E		1 WA-D (BBCH 14)	200L/ha	
6	HERB	Centium 36 CS	360gA/L	CS		0,15L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Proman	500gA/L	SC		0,5L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Roundup Bio	360gA/L	SC		1,5L/ha	B		Lige inden fremspiring	200L/ha	
	HERB	Pixxaro EC	305gA/L	EC		0,05L/ha	D		1 WA-C (BBCH 12)	200L/ha	
	HERB	Pixxaro EC	305gA/L	EC		0,075L/ha	F		4-6 DA-E (BBCH 16)	200L/ha	
7	HERB	Centium 36 CS	360gA/L	CS		0,15L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Proman	500gA/L	SC		0,5L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Roundup Bio	360gA/L	SC		1,5L/ha	B		Lige inden fremspiring	200L/ha	
	HERB	Pixxaro EC	305gA/L	EC		0,125L/ha	E		1 WA-D (BBCH 14)	200L/ha	
8	HERB	Centium 36 CS	360gA/L	CS		0,15L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Proman	500gA/L	SC		0,5L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Roundup Bio	360gA/L	SC		1,5L/ha	B		Lige inden fremspiring	200L/ha	
	HERB	Pixxaro EC	305gA/L	EC		0,05L/ha	D		1 WA-C (BBCH 12)	200L/ha	
	HERB	Venzar 500 SC	500gA/L	SC		0,15L/ha	D		1 WA-C (BBCH 12)	200L/ha	
	HERB	Pixxaro EC	305gA/L	EC		0,075L/ha	F		4-6 DA-E (BBCH 16)	200L/ha	
	HERB	Venzar 500 SC	500gA/L	SC		0,15L/ha	F		4-6 DA-E (BBCH 16)	200L/ha	
9	HERB	Centium 36 CS	360gA/L	CS		0,15L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Proman	500gA/L	SC		0,5L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Roundup Bio	360gA/L	SC		1,5L/ha	B		Lige inden fremspiring	200L/ha	
	HERB	Pixxaro EC	305gA/L	EC		0,05L/ha	D		1 WA-C (BBCH 12)	200L/ha	
	HERB	Asulox	400gA/L	SC		0,5L/ha	D		1 WA-C (BBCH 12)	200L/ha	
	HERB	Pixxaro EC	305gA/L	EC		0,075L/ha	F		4-6 DA-E (BBCH 16)	200L/ha	
	HERB	Asulox	400gA/L	SC		0,5L/ha	F		4-6 DA-E (BBCH 16)	200L/ha	
10	HERB	Centium 36 CS	360gA/L	CS		0,15L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Proman	500gA/L	SC		0,5L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Roundup Bio	360gA/L	SC		1,5L/ha	B		Lige inden fremspiring	200L/ha	
	HERB	Pixxaro EC	305gA/L	EC		0,05L/ha	D		1 WA-C (BBCH 12)	200L/ha	
	HERB	Nortron SC	500gA/L	SC		0,23L/ha	D		1 WA-C (BBCH 12)	200L/ha	
	ADJ	Renol	1000gA/L	XL		0,5L/ha	D		1 WA-C (BBCH 12)	200L/ha	
	HERB	Pixxaro EC	305gA/L	EC		0,075L/ha	F		4-6 DA-E (BBCH 16)	200L/ha	
	HERB	Nortron SC	500gA/L	SC		0,23L/ha	F		4-6 DA-E (BBCH 16)	200L/ha	
	ADJ	Renol	1000gA/L	XL		0,5L/ha	F		4-6 DA-E (BBCH 16)	200L/ha	
11	HERB	Centium 36 CS	360gA/L	CS		0,15L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Proman	500gA/L	SC		0,5L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Roundup Bio	360gA/L	SC		1,5L/ha	B		Lige inden fremspiring	200L/ha	
	HERB	Pixxaro EC	305gA/L	EC		0,05L/ha	E		1 WA-D (BBCH 14)	200L/ha	
	HERB	Asulox	400gA/L	SC		0,5L/ha	E		1 WA-D (BBCH 14)	200L/ha	
	HERB	Pixxaro EC	305gA/L	EC		0,075L/ha	G		4-6 DA-F	200L/ha	
	HERB	Asulox	400gA/L	SC		0,5L/ha	G		4-6 DA-F	200L/ha	

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Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Appl Code	Appl Description	Appl Amount	Amount Unit
12	HERB	Centium 36 CS	360	gA/L	CS	0,15	L/ha	A	Efter såning på fugtig jord	200	L/ha
	HERB	Proman	500	gA/L	SC	0,5	L/ha	A	Efter såning på fugtig jord	200	L/ha
	HERB	Roundup Bio	360	gA/L	SC	1,5	L/ha	B	Lige inden fremspiring	200	L/ha
	HERB	Pixxaro EC	305	gA/L	EC	0,05	L/ha	E	1 WA-D (BBCH 14)	200	L/ha
	HERB	Nortron SC	500	gA/L	SC	0,23	L/ha	E	1 WA-D (BBCH 14)	200	L/ha
	ADJ	Renol	1000	gA/L	XL	0,5	L/ha	E	1 WA-D (BBCH 14)	200	L/ha
	HERB	Pixxaro EC	305	gA/L	EC	0,075	L/ha	G	4-6 DA-F	200	L/ha
	HERB	Nortron SC	500	gA/L	SC	0,23	L/ha	G	4-6 DA-F	200	L/ha
	ADJ	Renol	1000	gA/L	XL	0,5	L/ha	G	4-6 DA-F	200	L/ha
13	HERB	Centium 36 CS	360	gA/L	CS	0,15	L/ha	A	Efter såning på fugtig jord	200	L/ha
	HERB	Venzar 500 SC	500	gA/L	SC	0,75	L/ha	A	Efter såning på fugtig jord	200	L/ha
	HERB	Roundup Bio	360	gA/L	SC	1,5	L/ha	B	Lige inden fremspiring	200	L/ha
	HERB	Pixxaro EC	305	gA/L	EC	0,05	L/ha	D	1 WA-C (BBCH 12)	200	L/ha
	HERB	Nortron SC	500	gA/L	SC	0,23	L/ha	D	1 WA-C (BBCH 12)	200	L/ha
	ADJ	Renol	1000	gA/L	XL	0,5	L/ha	D	1 WA-C (BBCH 12)	200	L/ha
	HERB	Pixxaro EC	305	gA/L	EC	0,075	L/ha	F	4-6 DA-E (BBCH 16)	200	L/ha
	HERB	Nortron SC	500	gA/L	SC	0,23	L/ha	F	4-6 DA-E (BBCH 16)	200	L/ha
	ADJ	Renol	1000	gA/L	XL	0,5	L/ha	F	4-6 DA-E (BBCH 16)	200	L/ha

Additional Treatment Information

Type	CHK = Check or Untreated HERB = Herbicide ADJ = Adjuvant
Treatment Name	Untreated Check, , , = Not treated| Roundup Bio, 360, gA/L, SC = glyphosate|360| Betanal, 160, gA/L, SC = phenmedipham|160| Proman, 500, gA/L, SC = metobromuron|500| Pixxaro EC, 305, gA/L, EC = fluroxypyr+halauxifen-methyl+cloquintocet-mexyl|280+12,5+12,5| Venzar 500 SC, 500, gA/L, SC = lenacil|500| Asulox, 400, gA/L, SC = asulam|400| Nortron SC, 500, gA/L, SC = ethofumesat|500| Renol, 1000, gA/L, XL = oil|1000|
Form Unit	gA/L = grams active ingredient per litre formulated product
Form Type	CS = capsule suspension|Liquid||A stable suspension of capsules in a fluid, normally intended for dilution with water before use. SC = suspension concentrate (= flowable concentrate)|Liquid||A stable suspension of active ingredient(s) in water, intended for dilution with water before use. EC = emulsifiable concentrate|Liquid||A liquid, homogeneous formulation to be applied as an emulsion after dilution in water. XL = other, liquid ingredient|Liquid||Other liquid ingredient
Rate Unit	L/ha = Liters Product per Hectare (US=GAL/A)|T
Amount Unit	L/ha = litres per hectare

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat strategi forsøg 2021.

Trial ID:21427-1
Protocol ID:21427
Project ID:29894

Location:AU Flakkebjerg
Investigator (Creator):Andrius Hansen Kemezys
Study Director:Peter Hartvig
Sponsor Contact:

Trial Year:2021

Trial Map Treatment Description

Trt	Code	Description
1	CHK	Untreated Check
2		Centium 36 CS 0.15 L/ha;Roundup Bio 1.5 L/ha;Betanal 1 L/ha;Betanal 1 L/ha
3		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Betanal 1 L/ha;Beta
4		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Betanal 1 L/ha;Beta
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 0.125 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
11		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC 0.05 L/h
12		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC 0.05 L/h
13		Centium 36 CS 0.15 L/ha;Venzar 500 SC 0.75 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC

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

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat strategi forsøg 2021.										
Pest Type	W; Weed	W; Weed	W; Weed	W; Weed						
Pest Code	FUMOF	GALAP	LAMPU	BBBBB						
Pest Scientific Name	Fumaria officinalis	Galium aparine	Lamium purpureum	Broad-leaved plants						
Pest Name	Common fumitory	Catchweed bedstraw	purple archangel	Broad-leaved plants						
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL					
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea					
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach					
Rating Date	17-06-2021	17-06-2021	17-06-2021	17-06-2021	17-05-2021					
SE Name	W006	W006	W006	W006	X001					
Part Rated	PLANT; P	PLANT; P	PLANT; P	PLANT; P	PLANT; C					
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN					
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100					
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT					
Crop Stage Majority/Min/Max	12; -; -	12; -; -	12; -; -	12; -; -						
Pest Stage Majority/Min/Max	65; -; -	55; -; -	61; -; -							
Pest Density	9,5 PLA/m2	5,2 PLA/m2	3,75 PLA/m2	7,25 PLA/m2						
Assessed By	AHK	AHK	AHK	AHK	PHA					
Trt-Eval Interval	13 DA-G	13 DA-G	13 DA-G	13 DA-G	2 DA-D					
Trt No.	Treatment Name	Rate	Other Rate	Other Rate	Appl Unit Code	6	7	8	9	1
1	Untreated Check									0,0b
2	Centium 36 CS	0,15L/ha			A	51,3c	65,0b	97,5a	80,0ab	25,8a
	Roundup Bio	1,5L/ha			B					
	Betanal	1L/ha			C					
	Betanal	1L/ha			D					
3	Centium 36 CS	0,15L/ha			A	58,8c	70,0b	97,5a	90,0ab	25,0a
	Proman	0,5L/ha			A					
	Roundup Bio	1,5L/ha			B					
	Betanal	1L/ha			C					
	Betanal	1L/ha			D					
4	Centium 36 CS	0,15L/ha			A	86,3b	80,0ab	98,0a	89,3ab	25,0a
	Proman	0,5L/ha			A					
	Roundup Bio	1,5L/ha			B					
	Betanal	1L/ha			C					
	Betanal	1L/ha			D					
	Pixxaro EC	0,125L/ha			E					
5	Centium 36 CS	0,15L/ha			A	83,8b	83,0ab	88,8a	80,0ab	35,0a
	Proman	0,5L/ha			A					
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			C					
	Pixxaro EC	0,075L/ha			E					
6	Centium 36 CS	0,15L/ha			A	72,5b	80,0ab	100,0a	81,3ab	26,3a
	Proman	0,5L/ha			A					
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			D					
	Pixxaro EC	0,075L/ha			F					
7	Centium 36 CS	0,15L/ha			A	82,5b	67,5b	94,3a	77,5b	5,0b
	Proman	0,5L/ha			A					
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,125L/ha			E					
8	Centium 36 CS	0,15L/ha			A	78,8b	88,8ab	93,8a	76,3b	31,3a
	Proman	0,5L/ha			A					
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			D					
	Venzar 500 SC	0,15L/ha			D					
	Pixxaro EC	0,075L/ha			F					
	Venzar 500 SC	0,15L/ha			F					
9	Centium 36 CS	0,15L/ha			A	80,0b	87,5ab	98,5a	95,8a	30,0a
	Proman	0,5L/ha			A					
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			D					
	Asulox	0,5L/ha			D					
	Pixxaro EC	0,075L/ha			F					
	Asulox	0,5L/ha			F					

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Pest Type	W; Weed	W; Weed	W; Weed	W; Weed	W; Weed
Pest Code	FUMOF	GALAP	LAMPU	BBBBB	
Pest Scientific Name	Fumaria officinalis	Galium aparine	Lamium purpureum	Broad-leaved plants	
Pest Name	Common fumitory	Catchweed bedstraw	purple archangel	Broad-leaved plants	
Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach
Rating Date	17-06-2021	17-06-2021	17-06-2021	17-06-2021	17-05-2021
SE Name	W006	W006	W006	W006	X001
Part Rated	PLANT; P	PLANT; P	PLANT; P	PLANT; P	PLANT; C
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Crop Stage Majority/Min/Max	12; -; -	12; -; -	12; -; -	12; -; -	12; -; -
Pest Stage Majority/Min/Max	65; -; -	55; -; -	61; -; -	61; -; -	61; -; -
Pest Density	9,5 PLA/m ²	5,2 PLA/m ²	3,75 PLA/m ²	7,25 PLA/m ²	7,25 PLA/m ²
Assessed By	AHK	AHK	AHK	AHK	PHA
Trt-Eval Interval	13 DA-G	13 DA-G	13 DA-G	13 DA-G	2 DA-D
Description					
Trt Treatment	Rate	Other	Other	Appl	
No. Name	Rate	Unit	Rate	Rate	Unit Code
10	Centium 36 CS	0,15L/ha		A	6
	Proman	0,5L/ha		A	6
	Roundup Bio	1,5L/ha		B	6
	Pixxaro EC	0,05L/ha		D	6
	Nortron SC	0,23L/ha		D	6
	Renol	0,5L/ha		D	6
	Pixxaro EC	0,075L/ha		F	6
	Nortron SC	0,23L/ha		F	6
	Renol	0,5L/ha		F	6
					98,3a
11	Centium 36 CS	0,15L/ha		A	7
	Proman	0,5L/ha		A	7
	Roundup Bio	1,5L/ha		B	7
	Pixxaro EC	0,05L/ha		E	7
	Asulox	0,5L/ha		E	7
	Pixxaro EC	0,075L/ha		G	7
	Asulox	0,5L/ha		G	7
					77,5b
12	Centium 36 CS	0,15L/ha		A	8
	Proman	0,5L/ha		A	8
	Roundup Bio	1,5L/ha		B	8
	Pixxaro EC	0,05L/ha		E	8
	Nortron SC	0,23L/ha		E	8
	Renol	0,5L/ha		E	8
	Pixxaro EC	0,075L/ha		G	8
	Nortron SC	0,23L/ha		G	8
	Renol	0,5L/ha		G	8
					99,0a
13	Centium 36 CS	0,15L/ha		A	9
	Venzar 500 SC	0,75L/ha		A	9
	Roundup Bio	1,5L/ha		B	9
	Pixxaro EC	0,05L/ha		D	9
	Nortron SC	0,23L/ha		D	9
	Renol	0,5L/ha		D	9
	Pixxaro EC	0,075L/ha		F	9
	Nortron SC	0,23L/ha		F	9
	Renol	0,5L/ha		F	9
					98,8a
LSD P=.05					9,47
Standard Deviation					6,59
CV					8,17
Grand Mean					80,60
Levene's F					1,715
Levene's Prob(F)					0,109
Rank X2					.
P(Rank X2)					.
Skewness					-0,8249*
Kurtosis					0,5063
					15,52
					10,79
					12,96
					83,27
					0,977
					0,484
					.
					.
					-1,0383*
					2,0683*
					8,20
					5,70
					5,88
					97,02
					1,283
					0,273
					.
					.
					-2,6075*
					6,805*
					10,07
					7,00
					8,05
					86,94
					0,335
					0,972
					.
					.
					-0,4457
					-1,1623
					6,62
					4,62
					22,28
					20,73
					0,942
					0,517
					.
					.
					-0,6491
					-1,1844

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Pest Type											
Pest Code											
Pest Scientific Name											
Pest Name											
Crop Type, Code							C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
Crop Scientific Name							Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea
Crop Name							Spinach	Spinach	Spinach	Spinach	Spinach
Rating Date							28-05-2021	04-06-2021	11-06-2021	17-06-2021	18-06-2021
SE Name							X001	X001	X001	X001	X001
Part Rated							PLANT; C	PLANT; C	PLANT; C	PLANT; C	PLANT; C
Rating Type							PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN
Rating Unit/Min/Max							%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100
Sample Size							1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Crop Stage Majority/Min/Max											
Pest Stage Majority/Min/Max											
Pest Density											
Assessed By							PHA	PHA	PHA	AHK	PHA
Trt-Eval Interval							4 DA-E	0 DA-G	7 DA-G	13 DA-G	14 DA-G
Description											
Trt No.	Treatment Name	Rate	Other Rate	Other Rate	Appl Unit	Code	2	3	4	5	10
1	Untreated Check						0,0d	0,0d	0,0c	0,0g	0,0c
2	Centium 36 CS	0,15L/ha				A	23,8ab	18,8bc	10,0abc	8,8fg	5,0bc
	Roundup Bio	1,5L/ha				B					
	Betanal	1L/ha				C					
	Betanal	1L/ha				D					
3	Centium 36 CS	0,15L/ha				A	25,0ab	21,3bc	17,5ab	17,5d-g	11,3abc
	Proman	0,5L/ha				A					
	Roundup Bio	1,5L/ha				B					
	Betanal	1L/ha				C					
	Betanal	1L/ha				D					
4	Centium 36 CS	0,15L/ha				A	38,8a	30,0abc	21,3ab	16,3efg	10,0abc
	Proman	0,5L/ha				A					
	Roundup Bio	1,5L/ha				B					
	Betanal	1L/ha				C					
	Betanal	1L/ha				D					
	Pixxaro EC	0,125L/ha				E					
5	Centium 36 CS	0,15L/ha				A	32,5ab	25,0abc	18,8ab	31,3b-e	11,3abc
	Proman	0,5L/ha				A					
	Roundup Bio	1,5L/ha				B					
	Pixxaro EC	0,05L/ha				C					
	Pixxaro EC	0,075L/ha				E					
6	Centium 36 CS	0,15L/ha				A	8,8cd	18,8bc	13,8ab	25,0c-f	6,3abc
	Proman	0,5L/ha				A					
	Roundup Bio	1,5L/ha				B					
	Pixxaro EC	0,05L/ha				D					
	Pixxaro EC	0,075L/ha				F					
7	Centium 36 CS	0,15L/ha				A	32,5ab	22,5bc	16,3ab	17,5d-g	6,3abc
	Proman	0,5L/ha				A					
	Roundup Bio	1,5L/ha				B					
	Pixxaro EC	0,125L/ha				E					
8	Centium 36 CS	0,15L/ha				A	17,5bc	16,3c	8,8bc	15,0efg	5,0bc
	Proman	0,5L/ha				A					
	Roundup Bio	1,5L/ha				B					
	Pixxaro EC	0,05L/ha				D					
	Venzar 500 SC	0,15L/ha				D					
	Pixxaro EC	0,075L/ha				F					
	Venzar 500 SC	0,15L/ha				F					
9	Centium 36 CS	0,15L/ha				A	18,8bc	20,0bc	12,5ab	26,3c-f	8,8abc
	Proman	0,5L/ha				A					
	Roundup Bio	1,5L/ha				B					
	Pixxaro EC	0,05L/ha				D					
	Asulox	0,5L/ha				D					
	Pixxaro EC	0,075L/ha				F					
	Asulox	0,5L/ha				F					

Aarhus University, Department of Agroecology, Flakkebjerg

Pest Type										
Pest Code										
Pest Scientific Name										
Pest Name										
Crop Type, Code						C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
Crop Scientific Name						Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea
Crop Name						Spinach	Spinach	Spinach	Spinach	Spinach
Rating Date						28-05-2021	04-06-2021	11-06-2021	17-06-2021	18-06-2021
SE Name						X001	X001	X001	X001	X001
Part Rated						PLANT; C	PLANT; C	PLANT; C	PLANT; C	PLANT; C
Rating Type						PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN
Rating Unit/Min/Max						%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100
Sample Size						1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Crop Stage Majority/Min/Max										
Pest Stage Majority/Min/Max										
Pest Density										
Assessed By						PHA	PHA	PHA	AHK	PHA
Trt-Eval Interval						4 DA-E	0 DA-G	7 DA-G	13 DA-G	14 DA-G
Description										
Trt No.	Treatment Name	Rate	Other Rate	Other Rate	Appl Code	2	3	4	5	10
10	Centium 36 CS	0,15L/ha			A	33,8ab	35,0a	25,0a	46,3ab	20,0ab
	Proman	0,5L/ha			A					
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			D					
	Nortron SC	0,23L/ha			D					
	Renol	0,5L/ha			D					
	Pixxaro EC	0,075L/ha			F					
	Nortron SC	0,23L/ha			F					
	Renol	0,5L/ha			F					
11	Centium 36 CS	0,15L/ha			A	25,0ab	17,5bc	16,3ab	35,0a-d	10,0abc
	Proman	0,5L/ha			A					
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			E					
	Asulox	0,5L/ha			E					
	Pixxaro EC	0,075L/ha			G					
	Asulox	0,5L/ha			G					
12	Centium 36 CS	0,15L/ha			A	22,5ab	18,8bc	17,5ab	50,0a	21,3a
	Proman	0,5L/ha			A					
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			E					
	Nortron SC	0,23L/ha			E					
	Renol	0,5L/ha			E					
	Pixxaro EC	0,075L/ha			G					
	Nortron SC	0,23L/ha			G					
	Renol	0,5L/ha			G					
13	Centium 36 CS	0,15L/ha			A	30,0ab	31,3ab	22,5ab	41,3abc	15,0abc
	Venzar 500 SC	0,75L/ha			A					
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			D					
	Nortron SC	0,23L/ha			D					
	Renol	0,5L/ha			D					
	Pixxaro EC	0,075L/ha			F					
	Nortron SC	0,23L/ha			F					
	Renol	0,5L/ha			F					
	LSD P=.05					10,19	8,54	9,09	12,17	9,06
	Standard Deviation					7,11	5,96	6,34	8,49	6,31
	CV					29,93	28,16	41,21	33,44	63,15
	Grand Mean					23,75	21,15	15,38	25,38	10,00
	Levene's F					1,779	1,566	1,691	0,855	1,335
	Levene's Prob(F)					0,087	0,143	0,107	0,597	0,239
	Rank X2					.	.	.	.	.
	P(Rank X2)					.	.	.	.	.
	Skewness					-0,3998	-0,3454	-0,2397	-0,0001	0,1805
	Kurtosis					-0,0849	-0,2531	-0,7089	-1,0652	-1,1597

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Trt No.	Treatment Name	Rate	Other Unit	Other Rate	Other Unit	Appl Code	11	12	13	14	15
1	Untreated Check						0,0c	0,0a	85,0ab	0,4350a	2175,0a (100,0%)
2	Centium 36 CS	0,15L/ha				A	5,0abc	0,0a	87,5ab	0,3823a	1911,3a (87,9%)
	Roundup Bio	1,5L/ha				B					
	Betanal	1L/ha				C					
	Betanal	1L/ha				D					
3	Centium 36 CS	0,15L/ha				A	7,5abc	5,0a	90,0a	0,3325a	1662,5a (76,4%)
	Proman	0,5L/ha				A					
	Roundup Bio	1,5L/ha				B					
	Betanal	1L/ha				C					
	Betanal	1L/ha				D					
4	Centium 36 CS	0,15L/ha				A	3,8abc	0,0a	83,8ab	0,3488a	1743,8a (80,2%)
	Proman	0,5L/ha				A					
	Roundup Bio	1,5L/ha				B					
	Betanal	1L/ha				C					
	Betanal	1L/ha				D					
	Pixxaro EC	0,125L/ha				E					
5	Centium 36 CS	0,15L/ha				A	7,5abc	0,0a	82,5ab	0,3268a	1633,8a (75,1%)
	Proman	0,5L/ha				A					
	Roundup Bio	1,5L/ha				B					
	Pixxaro EC	0,05L/ha				C					
	Pixxaro EC	0,075L/ha				E					
6	Centium 36 CS	0,15L/ha				A	2,5abc	0,0a	77,5ab	0,4270a	2135,0a (98,2%)
	Proman	0,5L/ha				A					
	Roundup Bio	1,5L/ha				B					
	Pixxaro EC	0,05L/ha				D					
	Pixxaro EC	0,075L/ha				F					
7	Centium 36 CS	0,15L/ha				A	5,0abc	0,0a	75,0ab	0,4323a	2161,3a (99,4%)
	Proman	0,5L/ha				A					
	Roundup Bio	1,5L/ha				B					
	Pixxaro EC	0,125L/ha				E					
8	Centium 36 CS	0,15L/ha				A	1,3bc	0,0a	77,5ab	0,4673a	2336,3a (107,4%)
	Proman	0,5L/ha				A					
	Roundup Bio	1,5L/ha				B					
	Pixxaro EC	0,05L/ha				D					
	Venzar 500 SC	0,15L/ha				D					
	Pixxaro EC	0,075L/ha				F					
	Venzar 500 SC	0,15L/ha				F					
9	Centium 36 CS	0,15L/ha				A	5,0abc	0,0a	80,0ab	0,3993a	1996,3a (91,8%)
	Proman	0,5L/ha				A					
	Roundup Bio	1,5L/ha				B					
	Pixxaro EC	0,05L/ha				D					
	Asulox	0,5L/ha				D					
	Pixxaro EC	0,075L/ha				F					
	Asulox	0,5L/ha				F					

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Trt	Treatment	Rate	Other	Other	Appl	11	12	13	14	15
No.	Name	Rate	Unit	Rate	Rate Unit	Code				
	10Centium 36 CS	0,15L/ha			A	13,8ab	6,3a	62,5b	0,3370a	1685,0a
	Proman	0,5L/ha			A					(77,5%)
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			D					
	Nortron SC	0,23L/ha			D					
	Renol	0,5L/ha			D					
	Pixxaro EC	0,075L/ha			F					
	Nortron SC	0,23L/ha			F					
	Renol	0,5L/ha			F					
	11Centium 36 CS	0,15L/ha			A	7,5abc	0,0a	77,5ab	0,3058a	1528,8a
	Proman	0,5L/ha			A					(70,3%)
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			E					
	Asulox	0,5L/ha			E					
	Pixxaro EC	0,075L/ha			G					
	Asulox	0,5L/ha			G					
	12Centium 36 CS	0,15L/ha			A	15,0a	2,5a	41,5c	0,2968a	1483,8a
	Proman	0,5L/ha			A					(68,2%)
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			E					
	Nortron SC	0,23L/ha			E					
	Renol	0,5L/ha			E					
	Pixxaro EC	0,075L/ha			G					
	Nortron SC	0,23L/ha			G					
	Renol	0,5L/ha			G					
	13Centium 36 CS	0,15L/ha			A	11,3abc	5,0a	65,0ab	0,2888a	1443,8a
	Venzar 500 SC	0,75L/ha			A					(66,4%)
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			D					
	Nortron SC	0,23L/ha			D					
	Renol	0,5L/ha			D					
	Pixxaro EC	0,075L/ha			F					
	Nortron SC	0,23L/ha			F					
	Renol	0,5L/ha			F					
	LSD P=.05					7,57	4,98	15,04	0,12385	619,26
	Standard Deviation					5,28	3,47	10,49	0,08636	431,82
	CV					80,68	240,9	13,84	23,49	23,49
	Grand Mean					6,54	1,44	75,79	0,36763	1838,17
	Levene's F					1,67	1,651	1,109	0,648	0,648
	Levene's Prob(F)					0,112	0,117	0,381	0,788	0,788
	Rank X2					.	.	.	.	.
	P(Rank X2)					.	.	.	.	.
	Skewness					0,7289*	3,0016*	-2,1087*	0,4104	0,4104
	Kurtosis					-0,533	9,3495*	7,0078*	-0,1027	-0,1027
	Replicate F					8,660	3,013	0,322	1,235	1,235
	Replicate Prob(F)					0,0002	0,0426	0,8095	0,3113	0,3113
	Treatment F					3,000	1,885	6,147	1,906	1,906
	Treatment Prob(F)					0,0053	0,0705	0,0001	0,0672	0,0672

Forsøg 21426, 21427-1-2-3, 21428, 21429 og 21443
UKRUDTSBEKÆMPELSE I HAVEFRØ
- Herbicidafprøvning ved AU Flakkebjerg 2021

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Aarhus University, Department of Agroecology, Flakkebjerg

Crop Type, Code				C; SPQOL
Crop Scientific Name				Spinacia oleracea
Crop Name				Spinach
Description				
Rating Date				28-02-2022
Part Rated				SEED; C
Rating Type				GERMIN
Rating Unit/Min/Max				%; 0; 100
Sample Size				100 SEED
Collection Basis				1 PLOT
Reporting Basis				100 SEED
Crop Stage Majority/Min/Max				
Assessed By				
Days After First/Last Applic.				-; 269
Trt-Eval Interval				
ARM Action Codes				
Trt No.	Treatment Description	Rate	Appl Unit	Code
1	Untreated Check not treated			16
				86,3a
2	Centium 36 CS	0,15L/ha	A	90,3a
	Roundup Bio	1,5L/ha	B	
	Betanal	1L/ha	C	
	Betanal	1L/ha	D	
3	Centium 36 CS	0,15L/ha	A	89,0a
	Proman	0,5L/ha	A	
	Roundup Bio	1,5L/ha	B	
	Betanal	1L/ha	C	
	Betanal	1L/ha	D	
4	Centium 36 CS	0,15L/ha	A	87,8a
	Proman	0,5L/ha	A	
	Roundup Bio	1,5L/ha	B	
	Betanal	1L/ha	C	
	Betanal	1L/ha	D	
	Pixxaro EC	0,125L/ha	E	
5	Centium 36 CS	0,15L/ha	A	90,5a
	Proman	0,5L/ha	A	
	Roundup Bio	1,5L/ha	B	
	Pixxaro EC	0,05L/ha	C	
	Pixxaro EC	0,075L/ha	E	
6	Centium 36 CS	0,15L/ha	A	83,8a
	Proman	0,5L/ha	A	
	Roundup Bio	1,5L/ha	B	
	Pixxaro EC	0,05L/ha	D	
	Pixxaro EC	0,075L/ha	F	
7	Centium 36 CS	0,15L/ha	A	87,0a
	Proman	0,5L/ha	A	
	Roundup Bio	1,5L/ha	B	
	Pixxaro EC	0,125L/ha	E	
8	Centium 36 CS	0,15L/ha	A	92,8a
	Proman	0,5L/ha	A	
	Roundup Bio	1,5L/ha	B	
	Pixxaro EC	0,05L/ha	D	
	Venzar 500 SC	0,15L/ha	D	
	Pixxaro EC	0,075L/ha	F	
	Venzar 500 SC	0,15L/ha	F	
9	Centium 36 CS	0,15L/ha	A	86,8a
	Proman	0,5L/ha	A	
	Roundup Bio	1,5L/ha	B	
	Pixxaro EC	0,05L/ha	D	
	Asulox	0,5L/ha	D	
	Pixxaro EC	0,075L/ha	F	
	Asulox	0,5L/ha	F	

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Aarhus University, Department of Agroecology, Flakkebjerg

Crop Type, Code				C; SPQOL
Crop Scientific Name				Spinacia oleracea
Crop Name				Spinach
Description				
Rating Date				28-02-2022
Part Rated				SEED; C
Rating Type				GERMIN
Rating Unit/Min/Max				%; 0; 100
Sample Size				100 SEED
Collection Basis				1 PLOT
Reporting Basis				100 SEED
Crop Stage Majority/Min/Max				
Assessed By				
Days After First/Last Applic.				-; 269
Trt-Eval Interval				
ARM Action Codes				
Trt No.	Treatment Name	Description	Rate	Appl Unit Code
				16
10	Centium 36 CS		0,15L/ha	A
	Proman		0,5L/ha	A
	Roundup Bio		1,5L/ha	B
	Pixxaro EC		0,05L/ha	D
	Nortron SC		0,23L/ha	D
	Renol		0,5L/ha	D
	Pixxaro EC		0,075L/ha	F
	Nortron SC		0,23L/ha	F
	Renol		0,5L/ha	F
11	Centium 36 CS		0,15L/ha	A
	Proman		0,5L/ha	A
	Roundup Bio		1,5L/ha	B
	Pixxaro EC		0,05L/ha	E
	Asulox		0,5L/ha	E
	Pixxaro EC		0,075L/ha	G
	Asulox		0,5L/ha	G
12	Centium 36 CS		0,15L/ha	A
	Proman		0,5L/ha	A
	Roundup Bio		1,5L/ha	B
	Pixxaro EC		0,05L/ha	E
	Nortron SC		0,23L/ha	E
	Renol		0,5L/ha	E
	Pixxaro EC		0,075L/ha	G
	Nortron SC		0,23L/ha	G
	Renol		0,5L/ha	G
13	Centium 36 CS		0,15L/ha	A
	Venzar 500 SC		0,75L/ha	A
	Roundup Bio		1,5L/ha	B
	Pixxaro EC		0,05L/ha	D
	Nortron SC		0,23L/ha	D
	Renol		0,5L/ha	D
	Pixxaro EC		0,075L/ha	F
	Nortron SC		0,23L/ha	F
	Renol		0,5L/ha	F
LSD P=.05				9,55
Standard Deviation				6,66
CV				8,05
Grand Mean				82,71
Levene's F				1,28
Levene's Prob(F)				0,269
Rank X2				.
P(Rank X2)				.
Skewness				-1,2669*
Kurtosis				1,7535*
Replicate F				2,401
Replicate Prob(F)				0,0837
Treatment F				7,966
Treatment Prob(F)				0,0001

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat strategi forsøg 2021.

Trial ID:21427-1	Location:AU Flakkebjerg	Trial Year:2021
Protocol ID:21427	Investigator (Creator):Andrius Hansen Kemezys	
Project ID:29894	Study Director:Peter Hartvig	
	Sponsor Contact:	

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

FUMOF, Fumaria officinalis, Common fumitory = IE

GALAP, Galium aparine, Catchweed bedstraw = IE

LAMPU, Lamium purpureum, purple archangel = IE

BBBBB, Broad-leaved plants, Broad-leaved plants = IE

Crop Code

SPQOL, BVNH, Spinacia oleracea, Spinach = US

Part Rated

PLANT = plant

P = Pest is Part Rated

C = Crop is Part Rated

Rating Type

CONTRO = control / burndown or knockdown

PHYGEN = phytotoxicity - general / injury

MATURI = maturity

GERMIN = germination

Rating Unit/Min/Max

%, 0, 100 = percent

PLOT = total plot

Pest Stage Majority/Min/Max

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

55 = First individual flowers visible (still closed); G_Half of inflorescence emerged (middle of heading)

61 = Beginning of flowering: 10% of flowers open

PLA/m2 = plants per square meter

Assessed By

AHK = Andrius Hansen Kemezys

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat strategi forsøg 2021.

Trial ID:21427-1 Location:AU Flakkebjerg Trial Year:2021
 Protocol ID:21427 Investigator (Creator):Andrius Hansen Kemezys
 Project ID:29894 Study Director:Peter Hartvig
 Sponsor Contact:

Pest Type										W; Weed		W; Weed		
Pest Code										FUMOF		GALAP		
Pest Scientific Name										Fumaria officinalis		Galium aparine		
Pest Name										Common fumitory		Catchweed bedstraw		
Crop Type, Code		C; SPQOL		C; SPQOL		C; SPQOL		C; SPQOL		C; SPQOL		C; SPQOL		
Crop Scientific Name		Spinacia oleracea		Spinacia oleracea		Spinacia oleracea		Spinacia oleracea		Spinacia oleracea		Spinacia oleracea		
Crop Name		Spinach		Spinach		Spinach		Spinach		Spinach		Spinach		
Rating Date		17-05-2021		28-05-2021		04-06-2021		11-06-2021		17-06-2021		17-06-2021		
SE Name		X001		X001		X001		X001		X001		W006		
Part Rated		PLANT; C		PLANT; C		PLANT; C		PLANT; C		PLANT; C		PLANT; P		
Rating Type		PHYGEN		PHYGEN		PHYGEN		PHYGEN		PHYGEN		CONTRO		
Rating Unit/Min/Max		% ; 0; 100		% ; 0; 100		% ; 0; 100		% ; 0; 100		% ; 0; 100		% ; 0; 100		
Sample Size		1 PLOT		1 PLOT		1 PLOT		1 PLOT		1 PLOT		1 PLOT		
Crop Stage Majority/Min/Max														
Pest Stage Majority/Min/Max														
Pest Density										12; -; -		12; -; -		
Assessed By		PHA		PHA		PHA		PHA		AHK		9,5 PLA/m2		
Tri-Eval Interval		2 DA-D		4 DA-E		0 DA-G		7 DA-G		13 DA-G		13 DA-G		
Description														
Tri	Treatment	Rate	Other	Other	Appl									
No.	Name	Rate	Unit	Rate	Unit	Code	Plot	1	2	3	4	5	6	7
1	Untreated Check							0,0	0,0	0,0	0,0	0,0		
							106	0,0	0,0	0,0	0,0	0,0		
							211	0,0	0,0	0,0	0,0	0,0		
							313	0,0	0,0	0,0	0,0	0,0		
							408	0,0	0,0	0,0	0,0	0,0		
							Mean =	0,0	0,0	0,0	0,0	0,0		
2	Centium 36 CS	0,15L/ha			A		108	25,0	25,0	20,0	10,0	0,0	50,0	70,0
	Roundup Bio	1,5L/ha			B		204	25,0	25,0	15,0	5,0	0,0	75,0	70,0
	Betanal	1L/ha			C		304	28,0	20,0	20,0	15,0	25,0	40,0	90,0
	Betanal	1L/ha			D		409	25,0	25,0	20,0	10,0	10,0	40,0	30,0
							Mean =	25,8	23,8	18,8	10,0	8,8	51,3	65,0
3	Centium 36 CS	0,15L/ha			A		107	25,0	30,0	20,0	15,0	0,0	55,0	65,0
	Proman	0,5L/ha			A		213	25,0	25,0	20,0	20,0	15,0	65,0	70,0
	Roundup Bio	1,5L/ha			B		314	20,0	20,0	20,0	15,0	35,0	60,0	65,0
	Betanal	1L/ha			C		411	30,0	25,0	25,0	20,0	20,0	55,0	80,0
	Betanal	1L/ha			D									
							Mean =	25,0	25,0	21,3	17,5	17,5	58,8	70,0
4	Centium 36 CS	0,15L/ha			A		110	25,0	40,0	30,0	15,0	10,0	85,0	75,0
	Proman	0,5L/ha			A		201	20,0	40,0	30,0	20,0	10,0	95,0	75,0
	Roundup Bio	1,5L/ha			B		302	25,0	40,0	30,0	30,0	35,0	75,0	95,0
	Betanal	1L/ha			C		407	30,0	35,0	30,0	20,0	10,0	90,0	75,0
	Betanal	1L/ha			D									
	Pixxaro EC	0,125L/ha			E									
							Mean =	25,0	38,8	30,0	21,3	16,3	86,3	80,0
5	Centium 36 CS	0,15L/ha			A		113	30,0	10,0	10,0	10,0	20,0	90,0	80,0
	Proman	0,5L/ha			A		212	40,0	50,0	30,0	25,0	40,0	80,0	92,0
	Roundup Bio	1,5L/ha			B		309	35,0	35,0	30,0	15,0	30,0	80,0	75,0
	Pixxaro EC	0,05L/ha			C		410	35,0	35,0	30,0	25,0	35,0	85,0	85,0
	Pixxaro EC	0,075L/ha			E									
							Mean =	35,0	32,5	25,0	18,8	31,3	83,8	83,0
6	Centium 36 CS	0,15L/ha			A		114	20,0	15,0	10,0	10,0	25,0	80,0	85,0
	Proman	0,5L/ha			A		207	20,0	0,0	20,0	10,0	10,0	65,0	75,0
	Roundup Bio	1,5L/ha			B		303	30,0	0,0	30,0	30,0	45,0	70,0	80,0
	Pixxaro EC	0,05L/ha			D		404	35,0	20,0	15,0	5,0	20,0	75,0	80,0
	Pixxaro EC	0,075L/ha			F									
							Mean =	26,3	8,8	18,8	13,8	25,0	72,5	80,0
7	Centium 36 CS	0,15L/ha			A		109	0,0	25,0	10,0	10,0	15,0	85,0	65,0
	Proman	0,5L/ha			A		214	20,0	30,0	20,0	10,0	20,0	80,0	80,0
	Roundup Bio	1,5L/ha			B		306	0,0	35,0	30,0	25,0	20,0	80,0	75,0
	Pixxaro EC	0,125L/ha			E		405	0,0	40,0	30,0	20,0	15,0	85,0	50,0
							Mean =	5,0	32,5	22,5	16,3	17,5	82,5	67,5
8	Centium 36 CS	0,15L/ha			A		101	25,0	20,0	20,0	15,0	20,0	70,0	100,0
	Proman	0,5L/ha			A		205	35,0	20,0	15,0	5,0	20,0	85,0	75,0
	Roundup Bio	1,5L/ha			B		308	30,0	10,0	10,0	0,0	0,0	80,0	90,0
	Pixxaro EC	0,05L/ha			D		403	35,0	20,0	20,0	15,0	20,0	80,0	90,0
	Venzar 500 SC	0,15L/ha			D									
	Pixxaro EC	0,075L/ha			F									
	Venzar 500 SC	0,15L/ha			F									
							Mean =	31,3	17,5	16,3	8,8	15,0	78,8	88,8
9	Centium 36 CS	0,15L/ha			A		103	30,0	20,0	25,0	20,0	30,0	80,0	100,0
	Proman	0,5L/ha			A		210	25,0	10,0	10,0	0,0	20,0	80,0	75,0
	Roundup Bio	1,5L/ha			B		311	35,0	25,0	30,0	25,0	35,0	85,0	85,0
	Pixxaro EC	0,05L/ha			D		414	30,0	20,0	15,0	5,0	20,0	75,0	90,0
	Asulox	0,5L/ha			D									
	Pixxaro EC	0,075L/ha			F									
	Asulox	0,5L/ha			F									
							Mean =	30,0	18,8	20,0	12,5	26,3	80,0	87,5

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Pest Type							W: Weed	W: Weed						
Pest Code							FUMOF	GALAP						
Pest Scientific Name							Fumaria officinalis	Galium aparine						
Pest Name							Common fumitory	Catchweed bedstraw						
Crop Type, Code							C: SPQOL	C: SPQOL						
Crop Scientific Name							Spinacia oleracea	Spinacia oleracea						
Crop Name							Spinach	Spinach						
Rating Date							17-05-2021	17-06-2021						
SE Name							X001	W006						
Part Rated							PLANT; C	PLANT; P						
Rating Type							PHYGEN	CONTRO						
Rating Unit/Min/Max							%; 0; 100	%; 0; 100						
Sample Size							1 PLOT	1 PLOT						
Crop Stage Majority/Min/Max							12; -; -	12; -; -						
Pest Stage Majority/Min/Max							65; -; -	55; -; -						
Pest Density							9,5 PLA/m2	5,2 PLA/m2						
Assessed By							AHK	AHK						
Trt-Eval Interval							13 DA-G	13 DA-G						
Description							13 DA-G	13 DA-G						
Trt	Treatment	Rate	Other	Other	Appl									
No.	Name	Rate	Unit	Rate	Rate Unit	Code	Plot	1	2	3	4	5	6	7
10	Centium 36 CS	0,15L/ha	A	112				30,0	25,0	30,0	20,0	45,0	100,0	100,0
	Proman	0,5L/ha	A	209				35,0	35,0	35,0	25,0	50,0	95,0	95,0
	Roundup Bio	1,5L/ha	B	310				30,0	35,0	35,0	25,0	45,0	100,0	95,0
	Pixxaro EC	0,05L/ha	D	413				35,0	40,0	40,0	30,0	45,0	98,0	100,0
	Nortron SC	0,23L/ha	D											
	Renol	0,5L/ha	D											
	Pixxaro EC	0,075L/ha	F											
	Nortron SC	0,23L/ha	F											
	Renol	0,5L/ha	F											
							Mean =	32,5	33,8	35,0	25,0	46,3	98,3	97,5
11	Centium 36 CS	0,15L/ha	A	105				0,0	25,0	20,0	15,0	35,0	80,0	100,0
	Proman	0,5L/ha	A	206				0,0	20,0	10,0	10,0	20,0	75,0	75,0
	Roundup Bio	1,5L/ha	B	301				10,0	30,0	20,0	20,0	40,0	75,0	75,0
	Pixxaro EC	0,05L/ha	E	402				0,0	25,0	20,0	20,0	45,0	80,0	75,0
	Asulox	0,5L/ha	E											
	Pixxaro EC	0,075L/ha	G											
	Asulox	0,5L/ha	G											
							Mean =	2,5	25,0	17,5	16,3	35,0	77,5	81,3
12	Centium 36 CS	0,15L/ha	A	104				0,0	25,0	20,0	15,0	45,0	99,0	100,0
	Proman	0,5L/ha	A	208				0,0	20,0	15,0	15,0	45,0	98,0	95,0
	Roundup Bio	1,5L/ha	B	312				0,0	20,0	25,0	25,0	60,0	100,0	100,0
	Pixxaro EC	0,05L/ha	E	401				0,0	25,0	15,0	15,0	50,0	99,0	100,0
	Nortron SC	0,23L/ha	E											
	Renol	0,5L/ha	E											
	Pixxaro EC	0,075L/ha	G											
	Nortron SC	0,23L/ha	G											
	Renol	0,5L/ha	G											
							Mean =	0,0	22,5	18,8	17,5	50,0	99,0	98,8
13	Centium 36 CS	0,15L/ha	A	111				30,0	35,0	35,0	20,0	40,0	100,0	100,0
	Venzar 500 SC	0,75L/ha	A	202				35,0	20,0	20,0	20,0	35,0	99,0	100,0
	Roundup Bio	1,5L/ha	B	305				30,0	25,0	30,0	20,0	45,0	97,0	100,0
	Pixxaro EC	0,05L/ha	D	412				30,0	40,0	40,0	30,0	45,0	99,0	100,0
	Nortron SC	0,23L/ha	D											
	Renol	0,5L/ha	D											
	Pixxaro EC	0,075L/ha	F											
	Nortron SC	0,23L/ha	F											
	Renol	0,5L/ha	F											
							Mean =	31,3	30,0	31,3	22,5	41,3	98,8	100,0

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Pest Type		W; Weed	W; Weed												
Pest Code		LAMPU	BBBBB												
Pest Scientific Name		Lamium purpureum	Broad-leaved plants												
Pest Name		purple archangel	Broad-leaved plants												
Crop Code		SPQOL	SPQOL	SPQOL	SPQOL	SPQOL	SPQOL	SPQOL	SPQOL	SPQOL	SPQOL	SPQOL	SPQOL	SPQOL	
BBCH Scale		BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	
Crop Scientific Name		Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	
Crop Name		Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	
Rating Date		17-06-2021	17-06-2021	18-06-2021	28-06-2021	12-07-2021	22-07-2021								
SE Name		W006	W006	X001	X001	X001	X001								
Part Rated		PLANT; P	PLANT; P	PLANT; C	PLANT; C	PLANT; C	PLANT; C								
Rating Type		CONTRO	CONTRO	PHYGEN	PHYGEN	PHYGEN	PHYGEN								
Rating Unit		%	%	%	%	%	%								
Sample Size, Unit		1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT								
Collection Basis, Unit		1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT								
Reporting Basis, Unit		1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT								
Crop Stage Majority		12	12	12	12	12	12								
Pest Density, Unit		3,75 PLA/m2	7,25 PLA/m2												
Assessed By		PLA	AHK	PHA	PHA	PHA	PHA								
Days After First/Last Applic.		-; 13	-; 13	-; 14	-; 24	-; 38	-; 48								
Trt-Eval Interval		13 DA-G	13 DA-G	14 DA-G	24 DA-G	38 DA-G	48 DA-G								
ARM Action Codes														TY1 APOC	
Trt	Treatment	Rate	Other	Other	Appl										
No.	Name	Rate	Unit	Rate	Rate Unit	Code	Plot	8	9	10	11	12	13	14	15
10	Centium 36 CS	0,15L/ha	A	112				95,0	90,0	15,0	10,0	5,0	60,0	0,3440	1720,0
	Proman	0,5L/ha	A	209				100,0	85,0	20,0	15,0	10,0	70,0	0,3590	1795,0
	Roundup Bio	1,5L/ha	B	310				95,0	95,0	20,0	10,0	0,0	50,0	0,4220	2110,0
	Pixxaro EC	0,05L/ha	D	413				100,0	97,0	25,0	20,0	10,0	70,0	0,2230	1115,0
	Nortron SC	0,23L/ha	D												
	Renol	0,5L/ha	D												
	Pixxaro EC	0,075L/ha	F												
	Nortron SC	0,23L/ha	F												
	Renol	0,5L/ha	F												
	Mean =							97,5	91,8	20,0	13,8	6,3	62,5	0,3370	1685,0
11	Centium 36 CS	0,15L/ha	A	105				100,0	90,0	10,0	0,0	0,0	75,0	0,3150	1575,0
	Proman	0,5L/ha	A	206				100,0	95,0	0,0	0,0	0,0	75,0	0,3480	1740,0
	Roundup Bio	1,5L/ha	B	301				100,0	90,0	10,0	10,0	0,0	80,0	0,3350	1675,0
	Pixxaro EC	0,05L/ha	E	402				100,0	95,0	20,0	20,0	0,0	80,0	0,2250	1125,0
	Asulox	0,5L/ha	E												
	Pixxaro EC	0,075L/ha	G												
	Asulox	0,5L/ha	G												
	Mean =							100,0	92,5	10,0	7,5	0,0	77,5	0,3058	1528,8
12	Centium 36 CS	0,15L/ha	A	104				100,0	92,0	20,0	15,0	0,0	60,0	0,2370	1185,0
	Proman	0,5L/ha	A	208				100,0	90,0	15,0	10,0	0,0	6,0	0,4200	2100,0
	Roundup Bio	1,5L/ha	B	312				100,0	99,0	25,0	15,0	0,0	50,0	0,2470	1235,0
	Pixxaro EC	0,05L/ha	E	401				100,0	99,0	25,0	20,0	10,0	50,0	0,2830	1415,0
	Nortron SC	0,23L/ha	E												
	Renol	0,5L/ha	E												
	Pixxaro EC	0,075L/ha	G												
	Nortron SC	0,23L/ha	G												
	Renol	0,5L/ha	G												
	Mean =							100,0	95,0	21,3	15,0	2,5	41,5	0,2968	1483,8
13	Centium 36 CS	0,15L/ha	A	111				99,0	97,0	10,0	10,0	10,0	50,0	0,3960	1980,0
	Venzar 500 SC	0,75L/ha	A	202				100,0	95,0	10,0	0,0	0,0	80,0	0,2530	1265,0
	Roundup Bio	1,5L/ha	B	305				95,0	85,0	15,0	10,0	0,0	60,0	0,3020	1510,0
	Pixxaro EC	0,05L/ha	D	412				100,0	99,0	25,0	25,0	10,0	70,0	0,2040	1020,0
	Nortron SC	0,23L/ha	D												
	Renol	0,5L/ha	D												
	Pixxaro EC	0,075L/ha	F												
	Nortron SC	0,23L/ha	F												
	Renol	0,5L/ha	F												
	Mean =							98,5	94,0	15,0	11,3	5,0	65,0	0,2888	1443,8

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Spinat strategi forsøg 2021.

Trial ID:21427-1	Location:AU Flakkebjerg	Trial Year:2021
Protocol ID:21427	Investigator (Creator):	Andrius Hansen Kemezys
Project ID:29894	Study Director:	Peter Hartvig
	Sponsor Contact:	

Crop Type, Code				C; SPQOL
Crop Scientific Name	Spinacia oleracea			Spinach
Crop Name				
Description				
Rating Date	28-02-2022			
Part Rated	SEED; C			
Rating Type	GERMIN			
Rating Unit/Min/Max	% ; 0; 100			
Sample Size	100 SEED			
Collection Basis	1 PLOT			
Reporting Basis	100 SEED			
Crop Stage Majority/Min/Max				
Assessed By				
Days After First/Last Applic.				-; 269
Trt-Eval Interval				
ARM Action Codes				
Trt No.	Treatment Name	Description	Rate	Appl Unit Code
1	Untreated Check	not treated		16
2	Centium 36 CS		0,15L/ha	A
	Roundup Bio		1,5L/ha	B
	Betanal		1L/ha	C
	Betanal		1L/ha	D
3	Centium 36 CS		0,15L/ha	A
	Proman		0,5L/ha	A
	Roundup Bio		1,5L/ha	B
	Betanal		1L/ha	C
	Betanal		1L/ha	D
4	Centium 36 CS		0,15L/ha	A
	Proman		0,5L/ha	A
	Roundup Bio		1,5L/ha	B
	Betanal		1L/ha	C
	Betanal		1L/ha	D
	Pixxaro EC		0,125L/ha	E
5	Centium 36 CS		0,15L/ha	A
	Proman		0,5L/ha	A
	Roundup Bio		1,5L/ha	B
	Pixxaro EC		0,05L/ha	C
	Pixxaro EC		0,075L/ha	E
6	Centium 36 CS		0,15L/ha	A
	Proman		0,5L/ha	A
	Roundup Bio		1,5L/ha	B
	Pixxaro EC		0,05L/ha	D
	Pixxaro EC		0,075L/ha	F
7	Centium 36 CS		0,15L/ha	A
	Proman		0,5L/ha	A
	Roundup Bio		1,5L/ha	B
	Pixxaro EC		0,125L/ha	E
8	Centium 36 CS		0,15L/ha	A
	Proman		0,5L/ha	A
	Roundup Bio		1,5L/ha	B
	Pixxaro EC		0,05L/ha	D
	Venzar 500 SC		0,15L/ha	D
	Pixxaro EC		0,075L/ha	F
	Venzar 500 SC		0,15L/ha	F
9	Centium 36 CS		0,15L/ha	A
	Proman		0,5L/ha	A
	Roundup Bio		1,5L/ha	B
	Pixxaro EC		0,05L/ha	D
	Asulox		0,5L/ha	D
	Pixxaro EC		0,075L/ha	F
	Asulox		0,5L/ha	F

Means followed by same letter or symbol do not significantly differ (P=0.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Crop Type, Code				C: SPQOL
Crop Scientific Name				Spinacia oleracea
Crop Name				Spinach
Description				
Rating Date				28-02-2022
Part Rated				SEED; C
Rating Type				GERMIN
Rating Unit/Min/Max				%; 0: 100
Sample Size				100 SEED
Collection Basis				1 PLOT
Reporting Basis				100 SEED
Crop Stage Majority/Min/Max				
Assessed By				
Days After First/Last Applic.				-; 269
Trt-Eval Interval				
ARM Action Codes				
Trt	Treatment	Rate	Appl	16
No.	Name	Description	Rate Unit Code	
10	Centium 36 CS		0,15L/ha A	67,8bc
	Proman		0,5L/ha A	
	Roundup Bio		1,5L/ha B	
	Pixxaro EC		0,05L/ha D	
	Nortron SC		0,23L/ha D	
	Renol		0,5L/ha D	
	Pixxaro EC		0,075L/ha F	
	Nortron SC		0,23L/ha F	
	Renol		0,5L/ha F	
11	Centium 36 CS		0,15L/ha A	69,8bc
	Proman		0,5L/ha A	
	Roundup Bio		1,5L/ha B	
	Pixxaro EC		0,05L/ha E	
	Asulox		0,5L/ha E	
	Pixxaro EC		0,075L/ha G	
	Asulox		0,5L/ha G	
12	Centium 36 CS		0,15L/ha A	64,8c
	Proman		0,5L/ha A	
	Roundup Bio		1,5L/ha B	
	Pixxaro EC		0,05L/ha E	
	Nortron SC		0,23L/ha E	
	Renol		0,5L/ha E	
	Pixxaro EC		0,075L/ha G	
	Nortron SC		0,23L/ha G	
	Renol		0,5L/ha G	
13	Centium 36 CS		0,15L/ha A	79,0ab
	Venzar 500 SC		0,75L/ha A	
	Roundup Bio		1,5L/ha B	
	Pixxaro EC		0,05L/ha D	
	Nortron SC		0,23L/ha D	
	Renol		0,5L/ha D	
	Pixxaro EC		0,075L/ha F	
	Nortron SC		0,23L/ha F	
	Renol		0,5L/ha F	
LSD P=.05				9,55
Standard Deviation				6,66
CV				8,05
Grand Mean				82,71
Levene's F				1,28
Levene's Prob(F)				0,269
Rank X2				.
P(Rank X2)				.
Skewness				-1,2669*
Kurtosis				1,7535*
Replicate F				2,401
Replicate Prob(F)				0,0837
Treatment F				7,966
Treatment Prob(F)				0,0001

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

LAMPFU, Lamium purpureum, purple archangel = IE

BBBBB, Broad-leaved plants, Broad-leaved plants = IE

Crop Code

SPQOL, BVNH, Spinacia oleracea, Spinach = US

SE Name

Y207_C2 = @YLDKGKG[1]

Part Rated

PLANT = plant

SEED = seed

P = Pest is Part Rated

C = Crop is Part Rated

Rating Type

CONTRO = control / burndown or knockdown

PHYGEN = phytotoxicity - general / injury

MATURI = maturity

WEIFRE = weight - fresh

YIEGRO = yield - gross

Rating Unit

% = percent

KG = kilogram

KG/HA = kilograms per hectare

PLOT = total plot

M2 = square meter

ha = hectare

PLOT = total plot

PLOT = total plot

HA = hectare

PLA/m2 = plants per square meter

Assessed By

AHK = Andrius Hansen Kemezys

ARM Action Codes

APOC = Automatic percent control (Control forced to 100% on AOV Means Table)

TY1 = 5000.0*[14]

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat strategi forsøg 2021.

Trial ID:21427-2

Location:Snekkerup

Trial Year:2021

Protocol ID:21427

Investigator:Andrius Hansen Kemezys

General Trial Information

Study Director:Peter Hartvig

Title:Study director

Investigator:Andrius Hansen Kemezys

Title:Academic employee

Discipline:H herbicide

Trial Status:F one-year/final

Trial Reliability:HIGH

ARM Trial Created On:26-03-2021

Initiation Date:19-04-2021

Protocol Revision Date:26-03-2021

Trial Location

City:Snekkerup

Country:DNK Denmark

State/Prov.:Slagelse

Postal Code:4200

Climate Zone:EPOMAR Eppo Maritime

Latitude of LL Corner °:55,315809 N

Longitude of LL Corner °:11,372197 E

Conducted Under GLP:No

Conducted Under GEP:Yes

Conclusions:

Forsøget blev udført i Snekkerup, i nærheden af forskningscentret AU Flakkebjerg. Forsøget har til formål at undersøge effektivitet og selektivitet af forskellige ukrudtsstrategier til spinat til frø.

Vejret i starten af forsøgsperioden kan beskrives som koldt og meget tørt, i maj måneder var nedbørsmængden dog noget over det normale, ca. 125%. sommermånederne juni og juli var med temperatur lidt over normalen, nedbørsmængden var især i juni meget under normalen 56% lavere. I juli var nedbørsmængden næsten normal, men med store variationer fra landsdel til landsdel.

Forsøget blev behandlet 6 gange: behandling A lige efter såning blev udført den 19. april; og bladsprøjtninger C, D, E, F og G blev udført henholdsvis den 10. 17. og 28. maj samt F og G behandling den 2. og 7. juni. B behandling med Roundup Bio, lige inden fremspiring af spinat blev ikke udført, da der ikke kom noget ukrudt på dette tidspunkt. Ved D behandlingen er produkterne blandet op med 1,0 L vand for meget, så doseringen er 25% svagere en forsøgsplanen.

Forsøget blev bedømt for skade 5 gange igennem vækstsæsonen, de sidste bedømmelser var henholdsvis 7 og 28 dage efter G behandlingen. Effekten på ukrudt er bedømt den 14. juni 7 dage efter G behandlingen.

Tre forskellige ukrudtsarter blev bedømt ved effektregistrering: Raps (BRSNN, *Brassica napus*), ager stedmoderblomst (VIOAR, *Viola arvensis*) og lugtløs kamille (MATIN, *Tripleurospermum inodorum*), desuden blev der bedømt andet 2-kimbladet ukrudt (BBBBB).

Resultatet fra effekt bedømmelsen 7 dage efter G behandlingen viser, at de fleste strategier har en for dårlig effekt over for de tilstedeværende ukrudts arter, kun i led 4 og 13 er effekten tilstrækkelig til at kontrollere de tilstedeværende ukrudtsarter. Over for raps er det kun i led 13, hvor effekten er signifikant bedre 95%, end alle de andre led. Over for ager stedmoderblomst er der ikke signifikant forskel mellem behandlingerne, effekten er fra 47-82% hvilket ikke er tilstrækkeligt. Over for kamille er effekten i led 3, 4, 9, 11 og 13 bedst 80-97%, der er dog ikke signifikant mellem disse led og de fleste andre led hvor effekten er noget lavere. Over for andet tokimbladet er den bedste effekt opnået i led 2, 3, 9, 10, 11 og 13, 81-100% effekt, der er dog ingen signifikant forskel mellem nogle af leddene.

Skadebedømmelserne medio juni og primo juli, henholdsvis 7 og 28 dage efter G behandlingen, viser at afgrøden er meget påvirket af behandlingerne, kraftige skader. Ved bedømmelsen 7 dage efter G behandlingen 7. juni er der i alle led, signifikant større skade i forhold til ubehandlet, i led 10, 12 og 13 hvor der er anvendt Nortron i behandlingen, er skaderne signifikant størst 68-73% skade på afgrøden, i forhold til de andre led. Ved bedømmelsen 14 dage efter G behandlingen 5. juli, er skaderne aftagende, i led 13 er skaden stadig signifikant størst, i forhold til ubehandlet, der er dog ikke signifikant forskel mellem behandlingerne.

Udbytte i marken er i ubehandlet meget lavt 644 kg/ha, udbytte registreringen kunne ikke vise nogen signifikant forskel, mellem leddene, eller i forhold til ubehandlet. I led 10, 12 og 13 hvor der er anvendt Nortron i behandlingen, er de laveste udbytter opnået 34-59 % af udbyttet i forhold til ubehandlet. I led 2 er det højeste udbytte opnået næste 800 kg/ha, 124% i forhold til ubehandlet.

Spiringsanalyse for spirehastighed og spireevne har påvist, at der var signifikant nedsat spireevne i led 6, 9, 11 og 12. Der indgår behandlinger med Nortron i led 12, mens der indgår sene sprøjtninger med Pixxaro i led 6, 9 og 11, hvilket kan være årsagen til nedsat spireevne i disse led.

Contacts

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Crop Description

Crop 1:SPQOL Spinacia oleracea Spinach
Stage Scale:BBCH **BBCH Scale:**BVNH

Pest Description

Pest 1 Type:W **Code:**BBBBB Broad-leaved plants
Common Name:Broad-leaved plants

Site and Design

Treated Plot Width:2,5 m
Treated Plot Length:7 m
Treated Plot Area:17,5 m² **Treatments:**13
Replications:4 **Study Design:**RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand:61,3 **% OM:**6,2 **Texture:**SL sandy loam
% Silt:14,6 **pH:**5,2
% Clay:18

Moisture and Weather Conditions

Overall Moisture Conditions:NORMAL normal
Closest Weather Station:AU Flakkebjerg **Distance, Unit:**1 km

Application Description

	A	B	C	D	E	F	G
Application Date:	19-04-2021	10-05-2021	17-05-2021	28-05-2021	02-06-2021	07-06-2021	
Appl. Start Time:	12:00	12:00	11:30	08:15	14:00	08:50	
Appl. Stop Time:	12:30	12:30	12:00	08:45	14:20	09:10	
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY	
Application Timing:	PREEM	FIINSP	FIINSP	FIINSP	FIINSP	FIINSP	
Application Placement:	SOIL	FOLIAR	FOLIAR	FOLIAR	FOLIAR	FOLIAR	
Applied By:	AHK	PEA	PEA	AHK	AHK	AHK	
Appl. Entry Date:	05-08-2021	05-08-2021	05-08-2021	05-08-2021	05-08-2021	05-08-2021	
Air Temperature Start, Stop:	-; 16,6 C	-; 19,2 C	-; 13,1 C	-; 17,8 C	-; 17,4 C	-; 19,1 C	
% Relative Humidity Start, Stop:	-; 35,9	-; 65		-; 59,3	-; 49,4	-; 77,9	
Wind Velocity+Dir., Start:	1,5 MPS; N	4,1 MPS; S		2,8 MPS; NW	5 MPS; SE	1,8 MPS; NW	
Wet Leaves (Y/N):		N; no		Y; yes	N; no	N; no	
Soil Temperature, Unit:	10,6 C		11,3 C	11,6 C	20,5 C	18,5 C	
Soil Moisture:	DRY	WET	WET	WET	DRY	DRY	
% Cloud Cover:	0	50	50	0	5	95	

Comment:

B sprøjtning blev ikke udført, da der var ingen fremspiret ukrudt.

Crop Stage At Each Application

	A	B	C	D	E	F	G
Crop 1 Code, BBCH Scale:	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH
Stage Scale Used:	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH
Stage Majority, Percent:	05; -		10-11; -	12; -	16; -	31; -	32; -

Pest Stage At Each Application

	A	B	C	D	E	F
Pest 1 Code, Type, Scale:	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH
	G					
Pest 1 Code, Type, Scale:	BBBBB; W; BBCH					

Forsøg 21426, 21427-1-2-3, 21428, 21429 og 21443
 UKRUDTSBEKÆMPELSE I HAVEFRØ
 - Herbicidafprøvning ved AU Flakkebjerg 2021

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Application Equipment							
	A	B	C	D	E	F	G
Appl. Equipment:	Selvkørende		Selvkørende	Selvkørende	Selvkørende	Selvkørende	Selvkørende
Equipment Type:	SPRAYE		SPRAYE	SPRAYE	SPRAYE	SPRAYE	SPRAYE
Operation Pressure:	3.8 BAR		3.8 BAR	3.8 BAR	3.8 BAR	3.8 BAR	3.8 BAR
Nozzle Type:	Hardi		Hardi	Hardi	Hardi	Hardi	Hardi
Nozzle Size:	LD015-110		LD015-110	LD015-110	LD015-110	LD015-110	LD015-110
Nozzle Spacing:	50 cm		50 cm	50 cm	50 cm	50 cm	50 cm
Nozzles/Row:	5		5	5	5	5	5
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 cm	50 cm	50 cm	50 cm	50 cm
Ground Speed:	3,6 KPH		3,6 KPH	3,6 KPH	3,6 KPH	3,6 KPH	3,6 KPH
Spray Volume:	200 L/ha		200 L/ha	200 L/ha	200 L/ha	200 L/ha	200 L/ha
Minimum Mix/Treatment:	1,4 Liters		1,4 Liters	1,4 Liters	1,4 Liters	1,4 Liters	1,4 Liters
Mix Size:	4 liters		4 liters	4 liters	4 liters	4 liters	4 liters

Date	By	Context	Notes
26-03-2021	Andrius Hansen Kemezys	STATUS	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
05-08-2021	Andrius Hansen Kemezys	STATUS	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

SE Definitions					
	1.	2.	3.	4.	5.
Rating Timing	A1	A1	A1	A1	A1
SE Name	O007	W006	W003	X001	Y207_C2
SE Description	Count of plants	% Ground cover of weeds	% weed control	% General phyto on plants (all symptoms)	Seed yield per ha (gross yield). Formula: ((Y207A)/plot size in m ²)*10000
Part Rated	PLANT; -	PLANT; -	PLANT; -	PLANT; -	SEED; -
Rating Type	COUPLA	GROUND	CONTRO	PHYGEN	YIEGRO
Rating Unit	NUMBER	%	%	%	KG/HA
Sample Size	- M2	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Reporting Basis	- M2	1 PLOT	1 PLOT	1 PLOT	1 HA
Calculation	IN	NC	NC	NC	IN
Number of Sub-samples					1
ARM Action Codes					@YLDKGGK[1]

Instructions:

Registreringer:

Timing	Nr.	Registreringer (ARM code)
Ved beh. D	1, 5	BBCH, PHYGEN
Ved beh. E	1, 2, 3, 4, 5	BBCH, CONTRO, GROUND, COUPLA, PHYGEN
2 uger efter E	1, 2, 3, 4, 5	BBCH, CONTRO, GROUND, COUPLA, PHYGEN
4 uger efter E	1, 2, 3, 4, 5	BBCH, CONTRO, GROUND, COUPLA, PHYGEN
Ved høst	6	YIEGRO

Nr	ARM code	SE name	Beskrivelse
1	BBCH		BBCH for afgrøde og ukrudt.
2	CONTRO	W003	Effekt på ukrudt. Effekt bedømmes som udgangspunkt ved at sammenligne hver parcel til ubehandlet, dog kan den første bedømmelse for ukrudtsdækning bruges. Der bedømmes artsvis for alle ukrudt med densitet over 5 planter/m² .
3	GROUND	W006	% dækning af hver ukrudtsart med densitet over 5 planter/m² i ubehandlede parceller .
4	COUPLA	O007	Ukrudtsdensitet for hver art over 5 planter/m² i ubehandlede parceller . Ukrudtsdensitet estimeres som planter/m ² .
5	PHYGEN	X001	Skade på afgrøder (%).
6	YIEGRO	Y207_C2	Brutto og netto udbytte i kg/ha

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat strategi forsøg 2021.

Trial ID:21427-2

Location:Snekkerup

Trial Year:2021

Protocol ID:21427

Investigator:Andrius Hansen Kemezys

Project ID:29894

Study Director:

Sponsor Contact:

Conducted Under GEP:Yes

Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate Rate	Rate Unit	Appl Code	Appl Description	Spray Volume	Volume Unit
1	CHK	Untreated Check									
2	HERB	Centium 36 CS	360gA/L	CS	0,15L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Roundup Bio	360gA/L	SC	1,5L/ha	B	Lige inden fremspiring	200L/ha			
	HERB	Betanal	160gA/L	SC	1L/ha	C	BBCH 10	200L/ha			
	HERB	Betanal	160gA/L	SC	1L/ha	D	1 WA-C (BBCH 12)	200L/ha			
3	HERB	Centium 36 CS	360gA/L	CS	0,15L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Proman	500gA/L	SC	0,5L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Roundup Bio	360gA/L	SC	1,5L/ha	B	Lige inden fremspiring	200L/ha			
	HERB	Betanal	160gA/L	SC	1L/ha	C	BBCH 10	200L/ha			
	HERB	Betanal	160gA/L	SC	1L/ha	D	1 WA-C (BBCH 12)	200L/ha			
4	HERB	Centium 36 CS	360gA/L	CS	0,15L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Proman	500gA/L	SC	0,5L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Roundup Bio	360gA/L	SC	1,5L/ha	B	Lige inden fremspiring	200L/ha			
	HERB	Betanal	160gA/L	SC	1L/ha	C	BBCH 10	200L/ha			
	HERB	Betanal	160gA/L	SC	1L/ha	D	1 WA-C (BBCH 12)	200L/ha			
	HERB	Pixxaro EC	305gA/L	EC	0,125L/ha	E	1 WA-D (BBCH 14)	200L/ha			
5	HERB	Centium 36 CS	360gA/L	CS	0,15L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Proman	500gA/L	SC	0,5L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Roundup Bio	360gA/L	SC	1,5L/ha	B	Lige inden fremspiring	200L/ha			
	HERB	Pixxaro EC	305gA/L	EC	0,05L/ha	C	BBCH 10	200L/ha			
	HERB	Pixxaro EC	305gA/L	EC	0,075L/ha	E	1 WA-D (BBCH 14)	200L/ha			
6	HERB	Centium 36 CS	360gA/L	CS	0,15L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Proman	500gA/L	SC	0,5L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Roundup Bio	360gA/L	SC	1,5L/ha	B	Lige inden fremspiring	200L/ha			
	HERB	Pixxaro EC	305gA/L	EC	0,05L/ha	D	1 WA-C (BBCH 12)	200L/ha			
	HERB	Pixxaro EC	305gA/L	EC	0,075L/ha	F	4-6 DA-E (BBCH 16)	200L/ha			
7	HERB	Centium 36 CS	360gA/L	CS	0,15L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Proman	500gA/L	SC	0,5L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Roundup Bio	360gA/L	SC	1,5L/ha	B	Lige inden fremspiring	200L/ha			
	HERB	Pixxaro EC	305gA/L	EC	0,125L/ha	E	1 WA-D (BBCH 14)	200L/ha			
8	HERB	Centium 36 CS	360gA/L	CS	0,15L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Proman	500gA/L	SC	0,5L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Roundup Bio	360gA/L	SC	1,5L/ha	B	Lige inden fremspiring	200L/ha			
	HERB	Pixxaro EC	305gA/L	EC	0,05L/ha	D	1 WA-C (BBCH 12)	200L/ha			
	HERB	Venzar 500 SC	500gA/L	SC	0,15L/ha	D	1 WA-C (BBCH 12)	200L/ha			
	HERB	Pixxaro EC	305gA/L	EC	0,075L/ha	F	4-6 DA-E (BBCH 16)	200L/ha			
	HERB	Venzar 500 SC	500gA/L	SC	0,15L/ha	F	4-6 DA-E (BBCH 16)	200L/ha			
9	HERB	Centium 36 CS	360gA/L	CS	0,15L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Proman	500gA/L	SC	0,5L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Roundup Bio	360gA/L	SC	1,5L/ha	B	Lige inden fremspiring	200L/ha			
	HERB	Pixxaro EC	305gA/L	EC	0,05L/ha	D	1 WA-C (BBCH 12)	200L/ha			
	HERB	Asulox	400gA/L	SC	0,5L/ha	D	1 WA-C (BBCH 12)	200L/ha			
	HERB	Pixxaro EC	305gA/L	EC	0,075L/ha	F	4-6 DA-E (BBCH 16)	200L/ha			
	HERB	Asulox	400gA/L	SC	0,5L/ha	F	4-6 DA-E (BBCH 16)	200L/ha			
10	HERB	Centium 36 CS	360gA/L	CS	0,15L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Proman	500gA/L	SC	0,5L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Roundup Bio	360gA/L	SC	1,5L/ha	B	Lige inden fremspiring	200L/ha			
	HERB	Pixxaro EC	305gA/L	EC	0,05L/ha	D	1 WA-C (BBCH 12)	200L/ha			
	HERB	Nortron SC	500gA/L	SC	0,23L/ha	D	1 WA-C (BBCH 12)	200L/ha			
	ADJ	Renol	1000gA/L	XL	0,5L/ha	D	1 WA-C (BBCH 12)	200L/ha			
	HERB	Pixxaro EC	305gA/L	EC	0,075L/ha	F	4-6 DA-E (BBCH 16)	200L/ha			
	HERB	Nortron SC	500gA/L	SC	0,23L/ha	F	4-6 DA-E (BBCH 16)	200L/ha			
	ADJ	Renol	1000gA/L	XL	0,5L/ha	F	4-6 DA-E (BBCH 16)	200L/ha			
11	HERB	Centium 36 CS	360gA/L	CS	0,15L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Proman	500gA/L	SC	0,5L/ha	A	Efter såning på fugtig jord	200L/ha			
	HERB	Roundup Bio	360gA/L	SC	1,5L/ha	B	Lige inden fremspiring	200L/ha			
	HERB	Pixxaro EC	305gA/L	EC	0,05L/ha	E	1 WA-D (BBCH 14)	200L/ha			
	HERB	Asulox	400gA/L	SC	0,5L/ha	E	1 WA-D (BBCH 14)	200L/ha			
	HERB	Pixxaro EC	305gA/L	EC	0,075L/ha	G	4-6 DA-F	200L/ha			
	HERB	Asulox	400gA/L	SC	0,5L/ha	G	4-6 DA-F	200L/ha			

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Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Lot Code	Rate	Rate Unit	Appl Code	Appl Description	Spray Volume	Volume Unit
12	HERB	Centium 36 CS	360	gA/L	CS	0,15	L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Proman	500	gA/L	SC	0,5	L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Roundup Bio	360	gA/L	SC	1,5	L/ha	B		Lige inden fremspiring	200L/ha	
	HERB	Pixxaro EC	305	gA/L	EC	0,05	L/ha	E		1 WA-D (BBCH 14)	200L/ha	
	HERB	Nortron SC	500	gA/L	SC	0,23	L/ha	E		1 WA-D (BBCH 14)	200L/ha	
	ADJ	Renol	1000	gA/L	XL	0,5	L/ha	E		1 WA-D (BBCH 14)	200L/ha	
	HERB	Pixxaro EC	305	gA/L	EC	0,075	L/ha	G		4-6 DA-F	200L/ha	
	HERB	Nortron SC	500	gA/L	SC	0,23	L/ha	G		4-6 DA-F	200L/ha	
	ADJ	Renol	1000	gA/L	XL	0,5	L/ha	G		4-6 DA-F	200L/ha	
13	HERB	Centium 36 CS	360	gA/L	CS	0,15	L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Venzar 500 SC	500	gA/L	SC	0,75	L/ha	A		Efter såning på fugtig jord	200L/ha	
	HERB	Roundup Bio	360	gA/L	SC	1,5	L/ha	B		Lige inden fremspiring	200L/ha	
	HERB	Pixxaro EC	305	gA/L	EC	0,05	L/ha	D		1 WA-C (BBCH 12)	200L/ha	
	HERB	Nortron SC	500	gA/L	SC	0,23	L/ha	D		1 WA-C (BBCH 12)	200L/ha	
	ADJ	Renol	1000	gA/L	XL	0,5	L/ha	D		1 WA-C (BBCH 12)	200L/ha	
	HERB	Pixxaro EC	305	gA/L	EC	0,075	L/ha	F		4-6 DA-E (BBCH 16)	200L/ha	
	HERB	Nortron SC	500	gA/L	SC	0,23	L/ha	F		4-6 DA-E (BBCH 16)	200L/ha	
	ADJ	Renol	1000	gA/L	XL	0,5	L/ha	F		4-6 DA-E (BBCH 16)	200L/ha	

Additional Treatment Information

Type

CHK = Check or Untreated

HERB = Herbicide

ADJ = Adjuvant

Treatment Name

Untreated Check, , , = Not treated

Roundup Bio, 360, gA/L, SC = glyphosate|360|

Betanal, 160, gA/L, SC = phenmedipham|160|

Proman, 500, gA/L, SC = metobromuron|500|

Pixxaro EC, 305, gA/L, EC = fluroxypyr+halauxifen-methyl+cloquintocet-mexyl|280+12,5+12,5|

Venzar 500 SC, 500, gA/L, SC = lenacil|500|

Asulox, 400, gA/L, SC = asulam|400|

Nortron SC, 500, gA/L, SC = ethofumesat|500|

Renol, 1000, gA/L, XL = oil|1000|

Form Unit

gA/L = grams active ingredient per litre formulated product

Form Type

CS = capsule suspension|Liquid||A stable suspension of capsules in a fluid, normally intended for dilution with water before use.

SC = suspension concentrate (= flowable concentrate)|Liquid||A stable suspension of active ingredient(s) in water, intended for dilution with water before use.

EC = emulsifiable concentrate|Liquid||A liquid, homogeneous formulation to be applied as an emulsion after dilution in water.

XL = other, liquid ingredient|Liquid||Other liquid ingredient

Rate Unit

L/ha = Liters Product per Hectare (US=GAL/A)|T

Volume Unit

L/ha = litres per hectare

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat strategi forsøg 2021.

Pest Type	W; Weed	W; Weed	W; Weed	W; Weed	
Pest Code	BRSNN	VIOAR	MATIN	BBBBB	
Pest Scientific Name	Brassica napus	Viola arvensis	Tripleurospermum inodorum	Broad-leaved plants	
Pest Name	coleseed	Field pansy	False chamomille	Broad-leaved plants	
Crop Code	SPQOL	SPQOL	SPQOL	SPQOL	SPQOL
BBCB Scale	BVNH	BVNH	BVNH	BVNH	BVNH
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach
Rating Date	14-06-2021	14-06-2021	14-06-2021	14-06-2021	21-05-2021
SE Name	W006	W006	W006	W006	X001
Part Rated	PLANT; P	PLANT; P	PLANT; P	PLANT; P	PLANT; C
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN
Rating Unit	%	%	%	%	%
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Crop Stage Majority	55	55	55	55	
Pest Stage Majority	19	31	32		
Pest Density, Unit	10,5 PLA/m2	15,2 PLA/m2	3,5 PLA/m2	8 PLA/m2	
Assessed By	AHK	AHK	AHK	AHK	PHA
Trt-Eval Interval	7 DA-G	7 DA-G	7 DA-G	7 DA-G	4 DA-D
Trt Treatment					
No. Name					
Rate					
Unit					
Other Rate					
Other Rate Unit					
Appl Code					
1Untreated Check					0,0c
2Centium 36 CS	0,15L/ha				28,8a
Roundup Bio	1,5L/ha				
Betanal	1L/ha				
Betanal	1L/ha				
3Centium 36 CS	0,15L/ha				28,8a
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Betanal	1L/ha				
Betanal	1L/ha				
4Centium 36 CS	0,15L/ha				26,3a
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Betanal	1L/ha				
Betanal	1L/ha				
Pixxaro EC	0,125L/ha				
5Centium 36 CS	0,15L/ha				16,3ab
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Pixxaro EC	0,075L/ha				
6Centium 36 CS	0,15L/ha				20,0a
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Pixxaro EC	0,075L/ha				
7Centium 36 CS	0,15L/ha				2,5bc
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,125L/ha				
8Centium 36 CS	0,15L/ha				17,5ab
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Venzar 500 SC	0,15L/ha				
Pixxaro EC	0,075L/ha				
Venzar 500 SC	0,15L/ha				
9Centium 36 CS	0,15L/ha				12,5abc
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Asulox	0,5L/ha				
Pixxaro EC	0,075L/ha				
Asulox	0,5L/ha				

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Pest Type	W; Weed	W; Weed	W; Weed	W; Weed						
Pest Code	BRSNN	VIOAR	MATIN	BBBBB						
Pest Scientific Name	Brassica napus	Viola arvensis	Tripleurospermum inodorum	Broad-leaved plants						
Pest Name	coleseed	Field pansy	False chamomille	Broad-leaved plants						
Crop Code	SPQOL	SPQOL	SPQOL	SPQOL	SPQOL					
BBCB Scale	BVNH	BVNH	BVNH	BVNH	BVNH					
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach					
Rating Date	14-06-2021	14-06-2021	14-06-2021	14-06-2021	21-05-2021					
SE Name	W006	W006	W006	W006	X001					
Part Rated	PLANT; P	PLANT; P	PLANT; P	PLANT; P	PLANT; C					
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN					
Rating Unit	%	%	%	%	%					
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT					
Crop Stage Majority	55	55	55	55						
Pest Stage Majority	19	31	32							
Pest Density, Unit	10,5 PLA/m2	15,2 PLA/m2	3,5 PLA/m2	8 PLA/m2						
Assessed By	AHK	AHK	AHK	AHK	PHA					
Trt-Eval Interval	7 DA-G	7 DA-G	7 DA-G	7 DA-G	4 DA-D					
Trt No.	Treatment Name	Rate	Other Rate	Other Rate	Appl Code	5	6	7	8	1
10	Centium 36 CS	0,15L/ha			A	68,5bc	47,5a	75,0abc	81,3ab	22,5a
	Proman	0,5L/ha			A					
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			D					
	Nortron SC	0,23L/ha			D					
	Renol	0,5L/ha			D					
	Pixxaro EC	0,075L/ha			F					
	Nortron SC	0,23L/ha			F					
	Renol	0,5L/ha			F					
11	Centium 36 CS	0,15L/ha			A	76,3b	67,5a	90,0ab	90,0ab	2,5bc
	Proman	0,5L/ha			A					
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			E					
	Asulox	0,5L/ha			E					
	Pixxaro EC	0,075L/ha			G					
	Asulox	0,5L/ha			G					
12	Centium 36 CS	0,15L/ha			A	66,3bc	70,0a	62,5abc	62,5b	0,0c
	Proman	0,5L/ha			A					
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			E					
	Nortron SC	0,23L/ha			E					
	Renol	0,5L/ha			E					
	Pixxaro EC	0,075L/ha			G					
	Nortron SC	0,23L/ha			G					
	Renol	0,5L/ha			G					
13	Centium 36 CS	0,15L/ha			A	95,0a	71,3a	97,5a	99,8a	28,8a
	Venzar 500 SC	0,75L/ha			A					
	Roundup Bio	1,5L/ha			B					
	Pixxaro EC	0,05L/ha			D					
	Nortron SC	0,23L/ha			D					
	Renol	0,5L/ha			D					
	Pixxaro EC	0,075L/ha			F					
	Nortron SC	0,23L/ha			F					
	Renol	0,5L/ha			F					
LSD P=.05						12,06	30,44	23,56	19,85	10,64
Standard Deviation						8,38	21,16	16,38	13,80	7,42
CV						13,21	33,79	22,05	16,52	46,78
Grand Mean						63,42	62,60	74,27	83,52	15,87
Levene's F						0,669	1,331	1,245	1,144	1,568
Levene's Prob(F)						0,758	0,248	0,294	0,358	0,142
Rank X2						.	.	.	.	.
P(Rank X2)						.	.	.	.	.
Skewness						-0,3626	-1,089*	-1,3063*	-0,9825*	-0,1054
Kurtosis						0,5347	0,7096	1,8796*	0,4321	-1,5199*

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

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat strategi forsøg 2021.

Trial ID:21427-2

Location:Snekkerup

Trial Year:2021

Protocol ID:21427

Investigator (Creator): Andrius Hansen Kemezys

Project ID:29894

Study Director:Peter Hartvig

Sponsor Contact:

Conducted Under GEP:Yes

Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach
Rating Date	31-05-2021	07-06-2021	14-06-2021	05-07-2021	05-01-2022	05-01-2022	03-03-2022
Part Rated	PLANT; C	PLANT; C	PLANT; C	PLANT; C	SEED; -	SEED; -	SEED; C
Rating Type	PHYGEN	PHYGEN	PHYGEN	PHYGEN	WEIFRE	YIEGRO	GERMIN
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	g; -;	KG/HA; -;	%; 0; 100
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT	2 M2	1 PLOT	100 SEED
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Reporting Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 HA	100 SEED
Number of Subsamples	1	1	1	1	1	1	1
Assessed By	PHA	PHA	AHK	PHA			
Days After First/Last Applic.	-; 3	-; 5	-; 7	-; 28	-; 212	-; 212	-; 269
Trt-Eval Interval	3 DA-E	0 DA-G	7 DA-G	28 DA-G			
ARM Action Codes						T1 APOC	
Number of Decimals	1	1	1	1			1
Trt Treatment	2	3	4	9	10	11	12
No. Name Description Rate Unit Code							
1Untreated Check not treated	0,0f	0,0f	0,0d	0,0b	129a	644a (100,0%)	89,5ab
2Centium 36 CS 0,15L/ha A	25,0e	18,8e	17,5c	17,5ab	160a	798a (123,9%)	88,8ab
Roundup Bio 1,5L/ha B							
Betanal 1L/ha C							
Betanal 1L/ha D							
3Centium 36 CS 0,15L/ha A	31,3de	28,8b-e	32,5bc	23,8ab	152a	760a (118,1%)	93,8a
Proman 0,5L/ha A							
Roundup Bio 1,5L/ha B							
Betanal 1L/ha C							
Betanal 1L/ha D							
4Centium 36 CS 0,15L/ha A	45,0bc	40,0b	41,3b	28,8ab	141a	703a (109,1%)	86,5abc
Proman 0,5L/ha A							
Roundup Bio 1,5L/ha B							
Betanal 1L/ha C							
Betanal 1L/ha D							
Pixxaro EC 0,125L/ha E							
5Centium 36 CS 0,15L/ha A	38,8cd	32,5bcd	32,5bc	25,0ab	129a	646a (100,4%)	89,3ab
Proman 0,5L/ha A							
Roundup Bio 1,5L/ha B							
Pixxaro EC 0,05L/ha C							
Pixxaro EC 0,075L/ha E							
6Centium 36 CS 0,15L/ha A	20,0e	23,8de	17,5c	21,3ab	83a	413a (64,1%)	67,8e
Proman 0,5L/ha A							
Roundup Bio 1,5L/ha B							
Pixxaro EC 0,05L/ha D							
Pixxaro EC 0,075L/ha F							
7Centium 36 CS 0,15L/ha A	31,3de	28,8b-e	28,8bc	21,3ab	125a	624a (96,9%)	86,5abc
Proman 0,5L/ha A							
Roundup Bio 1,5L/ha B							
Pixxaro EC 0,125L/ha E							
8Centium 36 CS 0,15L/ha A	23,8e	26,3cde	25,0bc	8,8b	135a	676a (105,0%)	83,8a-d
Proman 0,5L/ha A							
Roundup Bio 1,5L/ha B							
Pixxaro EC 0,05L/ha D							
Venzar 500 SC 0,15L/ha D							
Pixxaro EC 0,075L/ha F							
Venzar 500 SC 0,15L/ha F							

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach
Rating Date	31-05-2021	07-06-2021	14-06-2021	05-07-2021	05-01-2022	05-01-2022	03-03-2022
Part Rated	PLANT; C	PLANT; C	PLANT; C	PLANT; C	SEED; -	SEED; -	SEED; C
Rating Type	PHYGEN	PHYGEN	PHYGEN	PHYGEN	WEIFRE	YIEGRO	GERMIN
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	g; -; -	KG/HA; -; -	%; 0; 100
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT	2 M2	1 PLOT	100 SEED
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Reporting Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 HA	100 SEED
Assessed By	PHA	PHA	AHK	PHA			
Days After First/Last Applic.	-; 3	-; 5	-; 7	-; 28	-; 212	-; 212	-; 269
Trt-Eval Interval	3 DA-E	0 DA-G	7 DA-G	28 DA-G			
ARM Action Codes						T1 APOC	
Number of Decimals	1	1	1	1			1
Trt Treatment	2	3	4	9	10	11	12
No. Name	Description	Rate	Unit	Code			
9Centium 36 CS	0,15L/ha	A					
Proman	0,5L/ha	A					
Roundup Bio	1,5L/ha	B					
Pixxaro EC	0,05L/ha	D					
Asulox	0,5L/ha	D					
Pixxaro EC	0,075L/ha	F					
Asulox	0,5L/ha	F					
10Centium 36 CS	0,15L/ha	A					
Proman	0,5L/ha	A					
Roundup Bio	1,5L/ha	B					
Pixxaro EC	0,05L/ha	D					
Nortron SC	0,23L/ha	D					
Renol	0,5L/ha	D					
Pixxaro EC	0,075L/ha	F					
Nortron SC	0,23L/ha	F					
Renol	0,5L/ha	F					
11Centium 36 CS	0,15L/ha	A					
Proman	0,5L/ha	A					
Roundup Bio	1,5L/ha	B					
Pixxaro EC	0,05L/ha	E					
Asulox	0,5L/ha	E					
Pixxaro EC	0,075L/ha	G					
Asulox	0,5L/ha	G					
12Centium 36 CS	0,15L/ha	A					
Proman	0,5L/ha	A					
Roundup Bio	1,5L/ha	B					
Pixxaro EC	0,05L/ha	E					
Nortron SC	0,23L/ha	E					
Renol	0,5L/ha	E					
Pixxaro EC	0,075L/ha	G					
Nortron SC	0,23L/ha	G					
Renol	0,5L/ha	G					
13Centium 36 CS	0,15L/ha	A					
Venzar 500 SC	0,75L/ha	A					
Roundup Bio	1,5L/ha	B					
Pixxaro EC	0,05L/ha	D					
Nortron SC	0,23L/ha	D					
Renol	0,5L/ha	D					
Pixxaro EC	0,075L/ha	F					
Nortron SC	0,23L/ha	F					
Renol	0,5L/ha	F					
LSD P=.05	7,19	7,96	13,32	18,77	96,6	482,9	9,45
Standard Deviation	5,02	5,55	9,29	13,09	67,3	336,7	6,59
CV	16,61	18,32	25,7	56,97	59,14	59,14	8,06
Grand Mean	30,19	30,29	36,15	22,98	113,9	569,4	81,73
Levene's F	1,804	1,317	1,948	1,376	3,488	3,488	0,508
Levene's Prob(F)	0,082	0,248	0,058	0,218	0,002*	0,002*	0,897
Rank X2
P(Rank X2)
Skewness	-0,0597	0,2659	0,3802	0,3555	0,6881*	0,6881*	-0,7063*

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Spinat strategi forsøg 2021.

Trial ID:21427-2 Location:Snekkerup Trial Year:2021
 Protocol ID:21427 Investigator:Andrius Hansen Kemezys
 Project ID:29894 Study Director:
 Sponsor Contact:

Conducted Under GEP:Yes

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

BRSNN, Brassica napus, coleseed = IE

VIOAR, Viola arvensis, Field pansy = IE

MATIN, Tripleurospermum inodorum, False chamomille = IE

BBBBB, Broad-leaved plants, Broad-leaved plants = IE

Crop Code

SPQOL, BVNH, Spinacia oleracea, Spinach = US

SE Name

W006 = A1

X001 = A1

Part Rated

PLANT = plant

P = Pest is Part Rated

C = Crop is Part Rated

Rating Type

CONTRO = control / burndown or knockdown

PHYGEN = phytotoxicity - general / injury

Rating Unit

% = percent

PLOT = total plot

PLOT = total plot

PLOT = total plot

Pest Stage Majority

19 = 9 true leaves, leaf pairs or whorls unfolded

31 = 1 visibly extended internode; G_1 node stage

32 = 2 visibly extended internode; G_2 node stage

PLA/m2 = plants per square meter

Assessed By

AHK = Andrius Hansen Kemezys

Pest Type								W; Weed		W; Weed		W; Weed		W; Weed		
Pest Code								BRSNN		VIOAR		MATIN		BBBBB		
Pest Scientific Name								Brassica napus		Viola arvensis		Tripleurospermum inodorum		Broad-leaved plants		
Pest Name								coleseed		Field pansy		False chamomille		Broad-leaved plants		
Crop Code		SPQOL	SPQOL	SPQOL	SPQOL									SPQOL	SPQOL	
BBCH Scale		BVNH	BVNH	BVNH	BVNH									BVNH	BVNH	
Crop Name		Spinach	Spinach	Spinach	Spinach									Spinach	Spinach	
Rating Date		21-05-2021	31-05-2021	07-06-2021	14-06-2021									14-06-2021	05-07-2021	
SE Name		X001	X001	X001	X001									W006	X001	
Part Rated		PLANT; C	PLANT; C	PLANT; C	PLANT; C									PLANT; P	PLANT; P	
Rating Type		PHYGEN	PHYGEN	PHYGEN	PHYGEN									CONTRO	CONTRO	
Rating Unit		%	%	%	%									%	%	
Sample Size, Unit		1 PLOT	1 PLOT	1 PLOT	1 PLOT									1 PLOT	1 PLOT	
Crop Stage Majority					55									55	55	
Pest Stage Majority														32	32	
Pest Density, Unit														3,5 PLA/m2	8 PLA/m2	
Assessed By		PHA	PHA	PHA	AHK									AHK	AHK	
Trt-Eval Interval		4 DA-D	3 DA-E	0 DA-G	7 DA-G									7 DA-G	28 DA-G	
Trt	Treatment	Rate	Other	Other	Appl											
No.	Name	Rate	Unit	Rate	Rate Unit	Code	Plot	1	2	3	4	5	6	7	8	9
10	Centium 36 CS	0,15L/ha	A	109				20,0	50,0	60,0	75,0	65,0	40,0	60,0	50,0	60,0
	Proman	0,5L/ha	A	213				30,0	50,0	50,0	65,0	70,0	20,0	70,0	95,0	30,0
	Roundup Bio	1,5L/ha	B	304				20,0	50,0	50,0	65,0	65,0	70,0	70,0	85,0	45,0
	Pixxaro EC	0,05L/ha	D	412				20,0	50,0	50,0	75,0	74,0	60,0	100,0	95,0	40,0
	Nortron SC	0,23L/ha	D													
	Renol	0,5L/ha	D													
	Pixxaro EC	0,075L/ha	F													
	Nortron SC	0,23L/ha	F													
	Renol	0,5L/ha	F													
	Mean =							22,5	50,0	52,5	70,0	68,5	47,5	75,0	81,3	43,8
11	Centium 36 CS	0,15L/ha	A	107				0,0	25,0	25,0	40,0	85,0	65,0	85,0	90,0	25,0
	Proman	0,5L/ha	A	210				0,0	30,0	25,0	35,0	75,0	60,0	90,0	90,0	20,0
	Roundup Bio	1,5L/ha	B	303				0,0	30,0	20,0	25,0	75,0	75,0	85,0	100,0	20,0
	Pixxaro EC	0,05L/ha	E	409				10,0	20,0	20,0	30,0	70,0	70,0	100,0	80,0	25,0
	Asulox	0,5L/ha	E													
	Pixxaro EC	0,075L/ha	G													
	Asulox	0,5L/ha	G													
	Mean =							2,5	26,3	22,5	32,5	76,3	67,5	90,0	90,0	22,5
12	Centium 36 CS	0,15L/ha	A	111				0,0	20,0	35,0	55,0	65,0	65,0	75,0	55,0	20,0
	Proman	0,5L/ha	A	202				0,0	30,0	35,0	75,0	65,0	65,0	20,0	40,0	30,0
	Roundup Bio	1,5L/ha	B	314				0,0	20,0	40,0	70,0	65,0	65,0	80,0	75,0	30,0
	Pixxaro EC	0,05L/ha	E	405				0,0	25,0	35,0	75,0	70,0	85,0	75,0	80,0	35,0
	Nortron SC	0,23L/ha	E													
	Renol	0,5L/ha	E													
	Pixxaro EC	0,075L/ha	G													
	Nortron SC	0,23L/ha	G													
	Renol	0,5L/ha	G													
	Mean =							0,0	23,8	36,3	68,8	66,3	70,0	62,5	62,5	28,8
13	Centium 36 CS	0,15L/ha	A	104				20,0	60,0	70,0	75,0	95,0	85,0	100,0	99,0	70,0
	Venzar 500 SC	0,75L/ha	A	214				30,0	50,0	60,0	70,0	95,0	65,0	95,0	100,0	20,0
	Roundup Bio	1,5L/ha	B	313				35,0	50,0	50,0	75,0	95,0	65,0	100,0	100,0	30,0
	Pixxaro EC	0,05L/ha	D	408				30,0	55,0	60,0	75,0	95,0	70,0	95,0	100,0	50,0
	Nortron SC	0,23L/ha	D													
	Renol	0,5L/ha	D													
	Pixxaro EC	0,075L/ha	F													
	Nortron SC	0,23L/ha	F													
	Renol	0,5L/ha	F													
	Mean =							28,8	53,8	60,0	73,8	95,0	71,3	97,5	99,8	42,5

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat strategi forsøg 2021.

Trial ID:21427-2

Location:Snekkerup

Trial Year:2021

Protocol ID:21427

Investigator (Creator): Andrius Hansen Kemezys

Project ID:29894

Study Director:Peter Hartvig

Sponsor Contact:

Conducted Under GEP:Yes

Crop Type, Code				C; SPQOL	C; SPQOL	C; SPQOL	
Crop Name				Spinach	Spinach	Spinach	
Rating Date				05-01-2022	05-01-2022	03-03-2022	
Part Rated				SEED: -	SEED: -	SEED: C	
Rating Type				WEIFRE	YIEGRO	GERMIN	
Rating Unit/Min/Max				g; -; -	KG/HA; -; -	%; 0; 100	
Sample Size				2 M2	1 PLOT	100 SEED	
Collection Basis				1 PLOT	1 PLOT	1 PLOT	
Reporting Basis				1 PLOT	1 HA	100 SEED	
Number of Subsamples				1	1	1	
Assessed By							
Days After First/Last Applic.				-; 212	-; 212	-; 269	
Tri-Eval Interval							
ARM Action Codes					T1 APOC		
Number of Decimals						1	
Tri	Treatment	Rate	Appl				
No.	Name	Description	Rate Unit Code	Plot	10	11	12
1	Untreated Check	not treated		102	143	715	92,0
				211	177	885	87,0
				309	48	240	90,0
				403	147	735	89,0
				Mean =	129	644	89,5
2	Centium 36 CS	0,15L/ha	A	113	152	760	82,0
	Roundup Bio	1,5L/ha	B	201	275	1375	94,0
	Betanal	1L/ha	C	308	69	345	88,0
	Betanal	1L/ha	D	406	142	710	91,0
				Mean =	160	798	88,8
3	Centium 36 CS	0,15L/ha	A	108	56	280	91,0
	Proman	0,5L/ha	A	209	209	1045	93,0
	Roundup Bio	1,5L/ha	B	306	47	235	95,0
	Betanal	1L/ha	C	413	296	1480	96,0
	Betanal	1L/ha	D				
				Mean =	152	760	93,8
4	Centium 36 CS	0,15L/ha	A	110	89	445	90,0
	Proman	0,5L/ha	A	204	204	1020	86,0
	Roundup Bio	1,5L/ha	B	302	160	800	80,0
	Betanal	1L/ha	C	407	109	545	90,0
	Betanal	1L/ha	D				
	Pixxaro EC	0,125L/ha	E				
				Mean =	141	703	86,5
5	Centium 36 CS	0,15L/ha	A	105	43	215	86,0
	Proman	0,5L/ha	A	206	67	335	92,0
	Roundup Bio	1,5L/ha	B	301	212	1060	91,0
	Pixxaro EC	0,05L/ha	C	411	195	975	88,0
	Pixxaro EC	0,075L/ha	E				
				Mean =	129	646	89,3
6	Centium 36 CS	0,15L/ha	A	112	126	630	65,0
	Proman	0,5L/ha	A	203	62	310	76,0
	Roundup Bio	1,5L/ha	B	307	46	230	62,0
	Pixxaro EC	0,05L/ha	D	401	96	480	68,0
	Pixxaro EC	0,075L/ha	F				
				Mean =	83	413	67,8
7	Centium 36 CS	0,15L/ha	A	114	161	805	94,0
	Proman	0,5L/ha	A	208	80	400	86,0
	Roundup Bio	1,5L/ha	B	305	181	905	79,0
	Pixxaro EC	0,125L/ha	E	402	77	385	87,0
				Mean =	125	624	86,5
8	Centium 36 CS	0,15L/ha	A	106	49	245	88,0
	Proman	0,5L/ha	A	207	48	240	85,0
	Roundup Bio	1,5L/ha	B	311	204	1020	75,0
	Pixxaro EC	0,05L/ha	D	414	240	1200	87,0
	Venzar 500 SC	0,15L/ha	D				
	Pixxaro EC	0,075L/ha	F				
	Venzar 500 SC	0,15L/ha	F				
				Mean =	135	676	83,8
9	Centium 36 CS	0,15L/ha	A	101	188	940	69,0
	Proman	0,5L/ha	A	205	83	415	58,0
	Roundup Bio	1,5L/ha	B	312	185	925	84,0
	Pixxaro EC	0,05L/ha	D	410	116	580	70,0
	Asulox	0,5L/ha	D				
	Pixxaro EC	0,075L/ha	F				
	Asulox	0,5L/ha	F				
				Mean =	143	715	70,3

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Crop Type, Code					C; SPQOOL	C; SPQOOL	C; SPQOOL	
Crop Name					Spinach	Spinach	Spinach	
Rating Date					05-01-2022	05-01-2022	03-03-2022	
Part Rated					SEED; -	SEED; -	SEED; C	
Rating Type					WEIFRE	YIEGRO	GERMIN	
Rating Unit/Min/Max					g; -; -	KG/HA; -; -	%; 0; 100	
Sample Size					2 M2	1 PLOT	100 SEED	
Collection Basis					1 PLOT	1 PLOT	1 PLOT	
Reporting Basis					1 PLOT	1 HA	100 SEED	
Number of Subsamples					1	1	1	
Assessed By								
Days After First/Last Applic.					-; 212	-; 212	-; 269	
Trt-Eval Interval								
ARM Action Codes						T1 APOC		
Number of Decimals							1	
Trt	Treatment	Rate	Appl					
No.	Name	Description	Rate	Unit	Code	Plot		
						10	11	
							12	
10	Centium 36 CS		0,15L/ha	A	109	21	105	61,0
	Proman		0,5L/ha	A	213	76	380	83,0
	Roundup Bio		1,5L/ha	B	304	26	130	85,0
	Pixxaro EC		0,05L/ha	D	412	53	265	85,0
	Nortron SC		0,23L/ha	D				
	Renol		0,5L/ha	D				
	Pixxaro EC		0,075L/ha	F				
	Nortron SC		0,23L/ha	F				
	Renol		0,5L/ha	F				
					Mean =	44	220	78,5
11	Centium 36 CS		0,15L/ha	A	107	56	280	75,0
	Proman		0,5L/ha	A	210	169	845	76,0
	Roundup Bio		1,5L/ha	B	303	155	775	87,0
	Pixxaro EC		0,05L/ha	E	409	92	460	65,0
	Asulox		0,5L/ha	E				
	Pixxaro EC		0,075L/ha	G				
	Asulox		0,5L/ha	G				
					Mean =	118	590	75,8
12	Centium 36 CS		0,15L/ha	A	111	47	235	76,0
	Proman		0,5L/ha	A	202	31	155	74,0
	Roundup Bio		1,5L/ha	B	314	75	375	68,0
	Pixxaro EC		0,05L/ha	E	405	34	170	71,0
	Nortron SC		0,23L/ha	E				
	Renol		0,5L/ha	E				
	Pixxaro EC		0,075L/ha	G				
	Nortron SC		0,23L/ha	G				
	Renol		0,5L/ha	G				
					Mean =	47	234	72,3
13	Centium 36 CS		0,15L/ha	A	104	36	180	77,0
	Venzar 500 SC		0,75L/ha	A	214	124	620	77,0
	Roundup Bio		1,5L/ha	B	313	96	480	83,0
	Pixxaro EC		0,05L/ha	D	408	49	245	83,0
	Nortron SC		0,23L/ha	D				
	Renol		0,5L/ha	D				
	Pixxaro EC		0,075L/ha	F				
	Nortron SC		0,23L/ha	F				
	Renol		0,5L/ha	F				
					Mean =	76	381	80,0

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

BRSNN, Brassica napus, coleseed = IE

VIOAR, Viola arvensis, Field pansy = IE

MATIN, Tripleurospermum inodorum, False chamomille = IE

BBBBB, Broad-leaved plants, Broad-leaved plants = IE

Crop Code

SPOOL, BVNH, Spinacia oleracea, Spinach = US

SE Name

X001 = A1

W006 = A1

Part Rated

PLANT = plant

C = Crop is Part Rated

P = Pest is Part Rated

Rating Type

PHYGEN = phytotoxicity - general / injury

CONTRO = control / burndown or knockdown

Rating Unit

% = percent

PLOT = total plot

Pest Stage Majority

19 = 9 true leaves, leaf pairs or whorls unfolded

31 = 1 visibly extended internode; G_1 node stage

32 = 2 visibly extended internode; G_2 node stage

PLA/m2 = plants per square meter

Assessed By

AHK = Andrius Hansen Kemezys

Forsøg 21426, 21427-1-2-3, 21428, 21429 og 21443

UKRUDTSBEKÆMPELSE I HAVEFRØ

- Herbicidafprøvning ved AU Flakkebjerg 2021

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Aarhus University, Department of Agroecology, Flakkebjerg

Spinat strategi forsøg 2021.

Trial ID:21427-3

Location:Lystager Torp

Trial Year:2021

Protocol ID:21427

Investigator:Andrius Hansen Kemezys

General Trial Information

Study Director:Peter Hartvig

Title:Study director

Investigator:Andrius Hansen Kemezys

Title:Academic employee

Discipline:H herbicide

Trial Status:F final (completed)

Trial Reliability:HIGH

ARM Trial Created On:28-03-2021

Initiation Date:23-04-2021

Protocol Revision Date:26-03-2021

Trial Location

City:Lystager Torp

Country:DNK Denmark

State/Prov.:Fuglebjerg

Postal Code:4250

Climate Zone:EPOMAR EPO Maritime

Latitude of LL Corner °:55,309031 N

Longitude of LL Corner °:11,490654 E

Conducted Under GLP:No

Conducted Under GEP:Yes

Conclusions:

Forsøget blev udført ved Fuglebjerg på det sydvestlige Sjælland. Forsøget har til formål at undersøge effektivitet og selektivitet af forskellige ukrudtsstrategier til spinat til frø. Vejret i starten af forsøgsperioden kan beskrives som koldt og meget tørt, i maj måneder var nedbørsmængden dog noget over det normale, ca. 125%. Sommermånederne juni og juli var med temperatur lidt over normalen, nedbørsmængden var især i juni meget under normalen 56% lavere. I juli var nedbørsmængden næsten normal, men med store variationer fra landsdel til landsdel.

Forsøget blev behandlet 7 gange: behandling A efter såning, før fremspiring i st. 05 BBCH, blev udført den 23. april, behandling B Roundup Bio blev udført den 27. april, hvor afgrøden spinat stadig var i st. 05 BBCH. Bladsprøjtninger C, D, E, F og G blev udført henholdsvis den 10. 17. og 28. maj samt F og G behandling den 2. og 7. juni.

Forsøget blev bedømt for skade 5 gange igennem vækstsæsonen, de sidste bedømmelser var henholdsvis 8 og 28 dage efter G behandlingen. Effekten på ukrudt er bedømt den 15. juni 8 dage efter G behandlingen.

To forskellige ukrudtsarter blev bedømt ved effektregistrering: ager stedmoderblomst (VIOAR, *Viola arvensis*) og burre snerre (GALAP, *Galium aparine*), desuden blev der bedømt andet 2-kimbladet ukrudt (BBBBB).

Resultatet fra effekt bedømmelsen 8 dage efter G behandlingen viser, at alle strategier virker godt over for burre snerre og andet 2-kimbladet ukrudt, 81-100% effekt, der er ingen signifikant forskel mellem leddene. Effekten er især rigtig god over for burre snerre, her er effekten i alle led 99-100%. Over for ager stedmoderblomst er der ikke signifikant forskel mellem strategierne, effekten er fra 50-81% hvilket ikke er tilstrækkeligt, den højeste effekt er opnået i led 4 her er effekten 81%.

Skadebedømmelserne medio juni og primo juli, henholdsvis 8 og 28 dage efter G behandlingen, viser at afgrøden er meget påvirket af behandlingerne, kraftige skader. Ved bedømmelsen 8 dage efter G behandlingen 15. juni er der i alle led, signifikant større skade i forhold til ubehandlet, i led 4, 10, 12 og 13, er skaderne signifikant størst 50-57% skade på afgrøden, i forhold til de andre led. Ved bedømmelsen 28 dage efter G behandlingen 5. juli, er skaderne næste væk, i led 13 er skaden dog stadig signifikant størst, i forhold til ubehandlet, og de fleste andre led. Der er ikke signifikant forskel mellem de andre led.

Den 20. juli blev der bedømt modenhed af spinat. Led 10, 12 og 13 var de led, som blev mest forsinket med modning, der er dog ikke signifikant forskel til de andre led. Det tyder dog på at i disse led 10, 12 og 13 hvor der anvendt Nortron i behandlingen, skades spinaten mest.

Udbytte i marken er i ubehandlet 2376 kg/ha, hvilket må siges at være ok, udbytte registreringen kunne ikke vise nogen signifikant forskel, mellem leddene, eller i forhold til ubehandlet. I led 4, 5, 6 og 7 er de laveste udbytter opnået 82-87 % af udbyttet i forhold til ubehandlet.

Spiringsanalyse for spirehastighed og spireevne har ikke vist noget signifikant forskel mellem ubehandlet og de testede led. Der var dog tendens til at de led, som var behandlet med Nortron og med sent behandling af Pixxaro (især led 11) resulterede i nedsat spireevne.

Contacts

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Investigator:Andrius Hansen Kemezys **Title:**Academic employee
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Postal Code:4200 **E-mail:**ahk@agro.au.dk

Crop Description

Crop 1:SPQOL Spinacia oleracea Spinach
Stage Scale:BBCH **BBCH Scale:**BVNH

Pest Description

Pest 1 Type:W **Code:**BBBBB Broad-leaved plants
Common Name:Broad-leaved plants

Site and Design

Treated Plot Width:2,5 m **Site Type:**FIELD field
Treated Plot Length:7 m **Experimental Unit:**1 PLOT plot
Treated Plot Area:17,5 m² **Treatments:**14 **Tillage Type:**CONTIL conventional-till
Replications:4 **Study Design:**RACOBL Randomized Complete Block (RCB)

Soil Description

% Sand:67 **% OM:**5,1 **Texture:**SL sandy loam
% Silt:13,5 **pH:**5,5
% Clay:14,4

Moisture and Weather Conditions

Overall Moisture Conditions:NORMAL normal
Closest Weather Station:AU Flakkebjerg **Distance, Unit:**6,5 km

Application Description

	A	B	C	D	E	F	G
Application Date:	23-04-2021	27-04-2021	10-05-2021	17-05-2021	28-05-2021	02-06-2021	07-06-2021
Appl. Start Time:	10:00	10:00	10:30	13:30	07:15	12:50	14:00
Appl. Stop Time:	10:45	10:45	11:15	14:00	07:45	13:20	14:20
Interval to Prev. Appl., Unit:		4 DAYS	13 DAYS	7 DAYS	11 DAYS	5 DAYS	5 DAYS
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	PREEM	FIINSP	FIINSP	FIINSP	FIINSP	FIINSP	FIINSP
Application Placement:	SOIL	FOLIAR	FOLIAR	FOLIAR	FOLIAR	FOLIAR	FOLIAR
Applied By:	PEA	PEA	PEA	PEA	AHK	AHK	AHK
Appl. Entry Date:	05-08-2021	05-08-2021	05-08-2021	05-08-2021	05-08-2021	05-08-2021	05-08-2021
Air Temperature Start, Stop:	-; 8,6 C	-; 6,6 C	-; 17,1 C	-; 20,3 C	-; 8,9 C	-; 19,7 C	-; 22,7 C
% Relative Humidity Start, Stop:	-; 58	-; 67	-; 71	-; 52	-; 95	-; 44,5	-; 53,9
Wind Velocity+Dir., Start:	5,8 MPS; NW	3,1 MPS; N	4,1 MPS; SE	3,6 MPS; SW	1,5 MPS; NW	2 MPS; SE	1,8 MPS; NW
Wet Leaves (Y/N):				N; no	Y; yes	N; no	N; no
Soil Temperature, Unit:	8,2 C	6,2 C		14,5 C	11,5 C	21,1 C	21,5 C
Soil Moisture:	DRY	DRY	WET	WET	WET	DRY	DRY
% Cloud Cover:	10	0	100	40	10	10	75

Crop Stage At Each Application

	A	B	C	D	E	F	G
Crop 1 Code, BBCH Scale:	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH	SPQOL; BVNH
Stage Scale Used:	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH
Stage Majority, Percent:	05; -	05; -	10-11; -	12; -	13; -	31; -	32; -

Pest Stage At Each Application

	A	B	C	D	E	F
Pest 1 Code, Type, Scale:	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH	BBBBB; W; BBCH
	G					
Pest 1 Code, Type, Scale:	BBBBB; W; BBCH					

Application Equipment							
	A	B	C	D	E	F	G
Appl. Equipment:	bicyc.spraye	bicyc.spraye	bicyc.spraye	bicyc.spraye	bicyc.spraye	bicyc.spraye	bicyc.spraye
Equipment Type:	SPRBIC	SPRBIC	SPRBIC	SPRBIC	SPRBIC	SPRBIC	SPRBIC
Operation Pressure:	1,9 BAR	1,9 BAR	1,9 BAR	1,9 BAR	1,9 BAR	1,9 BAR	1,9 BAR
Nozzle Type:	Hardi	Hardi	Hardi	Hardi	Hardi	Hardi	Hardi
Nozzle Size:	LD015-110	LD015-110	LD015-110	LD015-110	LD015-110	LD015-110	LD015-110
Nozzle Spacing:	50 cm	50 cm	50 cm	50 cm	50 cm	50 cm	50 cm
Nozzles/Row:	3	3	3	3	3	3	3
Boom Length:	1,5 m	1,5 m	1,5 m	1,5 m	1,5 m	1,5 m	1,5 m
Boom Height:	50 cm	50 cm	50 cm	50 cm	50 cm	50 cm	50 cm
Spray Volume:	200 L/ha	200 L/ha	200 L/ha	200 L/ha	200 L/ha	200 L/ha	200 L/ha
Minimum Mix/Treatment:	1,4 Liters	1,4 Liters	1,4 Liters	1,4 Liters	1,4 Liters	1,4 Liters	1,4 Liters
Mix Size:	4 liters	4 liters	4 liters	4 liters	4 liters	4 liters	4 liters

Date	By	Context	Notes
28-03-2021	Andrius Hansen Kemezys	STATUS	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
05-08-2021	Andrius Hansen Kemezys	STATUS	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

SE Definitions					
	1.	2.	3.	4.	5.
Rating Timing	A1	A1	A1	A1	A1
SE Name	O007	W006	W003	X001	Y207_C2
SE Description	Count of plants	% Ground cover of weeds	% weed control	% General phyto on plants (all symptoms)	Seed yield per ha (gross yield). Formula: ((Y207A)/plot size in m2)*10000
Part Rated	PLANT; -	PLANT; -	PLANT; -	PLANT; -	SEED; -
Rating Type	COUPLA	GROUND	CONTRO	PHYGEN	YIEGRO
Rating Unit	NUMBER	%	%	%	KG/HA
Sample Size	- M2	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Reporting Basis	- M2	1 PLOT	1 PLOT	1 PLOT	1 HA
Calculation	IN	NC	NC	NC	IN
Number of Sub-samples					1
ARM Action Codes					@YLDKGKG[1]

Instructions:

Registreringer:

Timing	Nr.	Registreringer (ARM code)
Ved beh. D	1, 5	BBCH, PHYGEN
Ved beh. E	1, 2, 3, 4, 5	BBCH, CONTRO, GROUND, COUPLA, PHYGEN
2 uger efter E	1, 2, 3, 4, 5	BBCH, CONTRO, GROUND, COUPLA, PHYGEN
4 uger efter E	1, 2, 3, 4, 5	BBCH, CONTRO, GROUND, COUPLA, PHYGEN
Ved høst	6	YIEGRO

Nr	ARM code	SE name	Beskrivelse
1	BBCH		BBCH for afgrøde og ukrudt.
2	CONTRO	W003	Effekt på ukrudt. Effekt bedømmes som udgangspunkt ved at sammenligne hver parcel til ubehandlet, dog kan den første bedømmelse for ukrudtsdækning bruges. Der bedømmes artsvis for alle ukrudt med densitet over 5 planter/m2 .
3	GROUND	W006	% dækning af hver ukrudtsart med densitet over 5 planter/m2 i ubehandlede parceller .
4	COUPLA	O007	Ukrudtsdensitet for hver art over 5 planter/m2 i ubehandlede parceller . Ukrudtsdensitet estimeres som planter/m2.
5	PHYGEN	X001	Skade på afgrøder (%).
6	YIEGRO	Y207_C2	Brutto og netto udbytte i kg/ha

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat strategi forsøg 2021.

Trial ID:21427-3

Location:Lystager Torp

Trial Year:2021

Protocol ID:21427

Investigator:Andrius Hansen Kemezys

Project ID:29894

Study Director:

Sponsor Contact:

Conducted Under GEP:Yes

Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate Rate	Rate Unit	Appl Code	Appl Description	Spray Volume	Volume Unit
1	CHK	Untreated Check									
2	HERB	Centium 36 CS	360g/L	A/L	CS	0,15L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Roundup Bio	360g/L	A/L	SC	1,5L	/ha	B	Lige inden fremspiring	200L	/ha
	HERB	Betanal	160g/L	A/L	SC	1L	/ha	C	BBCH 10	200L	/ha
	HERB	Betanal	160g/L	A/L	SC	1L	/ha	D	1 WA-C (BBCH 12)	200L	/ha
3	HERB	Centium 36 CS	360g/L	A/L	CS	0,15L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Proman	500g/L	A/L	SC	0,5L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Roundup Bio	360g/L	A/L	SC	1,5L	/ha	B	Lige inden fremspiring	200L	/ha
	HERB	Betanal	160g/L	A/L	SC	1L	/ha	C	BBCH 10	200L	/ha
	HERB	Betanal	160g/L	A/L	SC	1L	/ha	D	1 WA-C (BBCH 12)	200L	/ha
4	HERB	Centium 36 CS	360g/L	A/L	CS	0,15L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Proman	500g/L	A/L	SC	0,5L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Roundup Bio	360g/L	A/L	SC	1,5L	/ha	B	Lige inden fremspiring	200L	/ha
	HERB	Betanal	160g/L	A/L	SC	1L	/ha	C	BBCH 10	200L	/ha
	HERB	Betanal	160g/L	A/L	SC	1L	/ha	D	1 WA-C (BBCH 12)	200L	/ha
	HERB	Pixxaro EC	305g/L	A/L	EC	0,125L	/ha	E	1 WA-D (BBCH 14)	200L	/ha
5	HERB	Centium 36 CS	360g/L	A/L	CS	0,15L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Proman	500g/L	A/L	SC	0,5L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Roundup Bio	360g/L	A/L	SC	1,5L	/ha	B	Lige inden fremspiring	200L	/ha
	HERB	Pixxaro EC	305g/L	A/L	EC	0,05L	/ha	C	BBCH 10	200L	/ha
	HERB	Pixxaro EC	305g/L	A/L	EC	0,075L	/ha	E	1 WA-D (BBCH 14)	200L	/ha
6	HERB	Centium 36 CS	360g/L	A/L	CS	0,15L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Proman	500g/L	A/L	SC	0,5L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Roundup Bio	360g/L	A/L	SC	1,5L	/ha	B	Lige inden fremspiring	200L	/ha
	HERB	Pixxaro EC	305g/L	A/L	EC	0,05L	/ha	D	1 WA-C (BBCH 12)	200L	/ha
	HERB	Pixxaro EC	305g/L	A/L	EC	0,075L	/ha	F	4-6 DA-E (BBCH 16)	200L	/ha
7	HERB	Centium 36 CS	360g/L	A/L	CS	0,15L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Proman	500g/L	A/L	SC	0,5L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Roundup Bio	360g/L	A/L	SC	1,5L	/ha	B	Lige inden fremspiring	200L	/ha
	HERB	Pixxaro EC	305g/L	A/L	EC	0,125L	/ha	E	1 WA-D (BBCH 14)	200L	/ha
8	HERB	Centium 36 CS	360g/L	A/L	CS	0,15L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Proman	500g/L	A/L	SC	0,5L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Roundup Bio	360g/L	A/L	SC	1,5L	/ha	B	Lige inden fremspiring	200L	/ha
	HERB	Pixxaro EC	305g/L	A/L	EC	0,05L	/ha	D	1 WA-C (BBCH 12)	200L	/ha
	HERB	Venzar 500 SC	500g/L	A/L	SC	0,15L	/ha	D	1 WA-C (BBCH 12)	200L	/ha
	HERB	Pixxaro EC	305g/L	A/L	EC	0,075L	/ha	F	4-6 DA-E (BBCH 16)	200L	/ha
	HERB	Venzar 500 SC	500g/L	A/L	SC	0,15L	/ha	F	4-6 DA-E (BBCH 16)	200L	/ha
9	HERB	Centium 36 CS	360g/L	A/L	CS	0,15L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Proman	500g/L	A/L	SC	0,5L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Roundup Bio	360g/L	A/L	SC	1,5L	/ha	B	Lige inden fremspiring	200L	/ha
	HERB	Pixxaro EC	305g/L	A/L	EC	0,05L	/ha	D	1 WA-C (BBCH 12)	200L	/ha
	HERB	Asulox	400g/L	A/L	SC	0,5L	/ha	D	1 WA-C (BBCH 12)	200L	/ha
	HERB	Pixxaro EC	305g/L	A/L	EC	0,075L	/ha	F	4-6 DA-E (BBCH 16)	200L	/ha
	HERB	Asulox	400g/L	A/L	SC	0,5L	/ha	F	4-6 DA-E (BBCH 16)	200L	/ha
10	HERB	Centium 36 CS	360g/L	A/L	CS	0,15L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Proman	500g/L	A/L	SC	0,5L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Roundup Bio	360g/L	A/L	SC	1,5L	/ha	B	Lige inden fremspiring	200L	/ha
	HERB	Pixxaro EC	305g/L	A/L	EC	0,05L	/ha	D	1 WA-C (BBCH 12)	200L	/ha
	HERB	Nortron SC	500g/L	A/L	SC	0,23L	/ha	D	1 WA-C (BBCH 12)	200L	/ha
	ADJ	Renol	1000g/L	A/L	XL	0,5L	/ha	D	1 WA-C (BBCH 12)	200L	/ha
	HERB	Pixxaro EC	305g/L	A/L	EC	0,075L	/ha	F	4-6 DA-E (BBCH 16)	200L	/ha
	HERB	Nortron SC	500g/L	A/L	SC	0,23L	/ha	F	4-6 DA-E (BBCH 16)	200L	/ha
	ADJ	Renol	1000g/L	A/L	XL	0,5L	/ha	F	4-6 DA-E (BBCH 16)	200L	/ha
11	HERB	Centium 36 CS	360g/L	A/L	CS	0,15L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Proman	500g/L	A/L	SC	0,5L	/ha	A	Efter såning på fugtig jord	200L	/ha
	HERB	Roundup Bio	360g/L	A/L	SC	1,5L	/ha	B	Lige inden fremspiring	200L	/ha
	HERB	Pixxaro EC	305g/L	A/L	EC	0,05L	/ha	E	1 WA-D (BBCH 14)	200L	/ha
	HERB	Asulox	400g/L	A/L	SC	0,5L	/ha	E	1 WA-D (BBCH 14)	200L	/ha
	HERB	Pixxaro EC	305g/L	A/L	EC	0,075L	/ha	G	4-6 DA-F	200L	/ha
	HERB	Asulox	400g/L	A/L	SC	0,5L	/ha	G	4-6 DA-F	200L	/ha

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Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Appl Code	Appl Description	Spray Volume	Volume Unit
12	HERB	Centium 36 CS	360	gA/L	CS	0,15	L/ha	A	Efter såning på fugtig jord	200	L/ha
	HERB	Proman	500	gA/L	SC	0,5	L/ha	A	Efter såning på fugtig jord	200	L/ha
	HERB	Roundup Bio	360	gA/L	SC	1,5	L/ha	B	Lige inden fremspiring	200	L/ha
	HERB	Pixxaro EC	305	gA/L	EC	0,05	L/ha	E	1 WA-D (BBCH 14)	200	L/ha
	HERB	Nortron SC	500	gA/L	SC	0,23	L/ha	E	1 WA-D (BBCH 14)	200	L/ha
	ADJ	Renol	1000	gA/L	XL	0,5	L/ha	E	1 WA-D (BBCH 14)	200	L/ha
	HERB	Pixxaro EC	305	gA/L	EC	0,075	L/ha	G	4-6 DA-F	200	L/ha
	HERB	Nortron SC	500	gA/L	SC	0,23	L/ha	G	4-6 DA-F	200	L/ha
	ADJ	Renol	1000	gA/L	XL	0,5	L/ha	G	4-6 DA-F	200	L/ha
13	HERB	Centium 36 CS	360	gA/L	CS	0,15	L/ha	A	Efter såning på fugtig jord	200	L/ha
	HERB	Venzar 500 SC	500	gA/L	SC	0,75	L/ha	A	Efter såning på fugtig jord	200	L/ha
	HERB	Roundup Bio	360	gA/L	SC	1,5	L/ha	B	Lige inden fremspiring	200	L/ha
	HERB	Pixxaro EC	305	gA/L	EC	0,05	L/ha	D	1 WA-C (BBCH 12)	200	L/ha
	HERB	Nortron SC	500	gA/L	SC	0,23	L/ha	D	1 WA-C (BBCH 12)	200	L/ha
	ADJ	Renol	1000	gA/L	XL	0,5	L/ha	D	1 WA-C (BBCH 12)	200	L/ha
	HERB	Pixxaro EC	305	gA/L	EC	0,075	L/ha	F	4-6 DA-E (BBCH 16)	200	L/ha
	HERB	Nortron SC	500	gA/L	SC	0,23	L/ha	F	4-6 DA-E (BBCH 16)	200	L/ha
	ADJ	Renol	1000	gA/L	XL	0,5	L/ha	F	4-6 DA-E (BBCH 16)	200	L/ha
14	HERB	Roundup Bio	360	gA/L	SC	1,5	L/ha	B	Lige inden fremspiring	200	L/ha

Additional Treatment Information

Type
 CHK = Check or Untreated
 HERB = Herbicide
 ADJ = Adjuvant

Treatment Name
 Untreated Check, , , = Not treated|
 Roundup Bio, 360, gA/L, SC = glyphosate|360|
 Betanal, 160, gA/L, SC = phenmedipham|160|
 Proman, 500, gA/L, SC = metobromuron|500|
 Pixxaro EC, 305, gA/L, EC = fluroxypyr+halauxifen-methyl+cloquintocet-mexyl|280+12,5+12,5|
 Venzar 500 SC, 500, gA/L, SC = lenacil|500|
 Asulox, 400, gA/L, SC = asulam|400|
 Nortron SC, 500, gA/L, SC = ethofumesat|500|
 Renol, 1000, gA/L, XL = oil|1000|

Form Unit
 gA/L = grams active ingredient per litre formulated product

Form Type
 CS = capsule suspension|Liquid||A stable suspension of capsules in a fluid, normally intended for dilution with water before use.
 SC = suspension concentrate (= flowable concentrate)|Liquid||A stable suspension of active ingredient(s) in water, intended for dilution with water before use.
 EC = emulsifiable concentrate|Liquid||A liquid, homogeneous formulation to be applied as an emulsion after dilution in water.
 XL = other, liquid ingredient|Liquid||Other liquid ingredient

Rate Unit
 L/ha = Liters Product per Hectare (US=GAL/A)|T

Volume Unit
 L/ha = litres per hectare

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Spinat strategi forsøg 2021.

Trial ID:21427-3
Protocol ID:21427
Project ID:29894

Location:Lystager Torp
Investigator:Andrius Hansen Kemezys
Study Director:
Sponsor Contact:

Trial Year:2021

Conducted Under GEP:Yes

Trial Map Treatment Description

Trt	Code	Description
1	CHK	Untreated Check
2		Centium 36 CS 0.15 L/ha;Roundup Bio 1.5 L/ha;Betanal 1 L/ha;Betanal 1 L/ha
3		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Betanal 1 L/ha;Beta
4		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Betanal 1 L/ha;Beta
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 0.125 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
11		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC 0.05 L/h
12		Centium 36 CS 0.15 L/ha;Proman 0.5 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC 0.05 L/h
13		Centium 36 CS 0.15 L/ha;Venzar 500 SC 0.75 L/ha;Roundup Bio 1.5 L/ha;Pixxaro EC
14		Roundup Bio 1.5 L/ha

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

Pest Type	W; Weed	W; Weed	W; Weed		
Pest Code	VIOAR	GALAP	BBBBB		
Pest Scientific Name	Viola arvensis	Galium aparine	Broad-leaved plants		
Pest Name	Field pansy	Catchweed bedstraw	Broad-leaved plants		
Crop Code	SPQOL	SPQOL	SPQOL	SPQOL	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
Description					
Rating Date	15-06-2021	15-06-2021	15-06-2021	21-05-2021	31-05-2021
SE Name	W003	W003	W003	X001	X001
Part Rated	PLANT; -	PLANT; -	PLANT; -	PLANT; C	PLANT; C
Rating Type	CONTRO	CONTRO	CONTRO	PHYGEN	PHYGEN
Rating Unit	%	%	%	%	%
Calculation	NC	NC	NC	NC	NC
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Crop Stage Majority	61	61	61		
Pest Stage Majority	61	61			
Pest Stage Minimum/Maximum	61; 61				
Pest Density, Unit	11,5 PLA/m2	3 PLA/m2	6,25 PLA/m2		
Assessed By	AHK	AHK	AHK	PHA	PHA
Trt-Eval Interval	8 DA-G	8 DA-G	8 DA-G	4 DA-D	3 DA-E
Trt Treatment	5	6	7	1	2
No. Name					
1Untreated Check				0,0f	0,0e
2Centium 36 CS	0,15L/ha				
Roundup Bio	1,5L/ha				
Betanal	1L/ha				
Betanal	1L/ha				
3Centium 36 CS	0,15L/ha				
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Betanal	1L/ha				
Betanal	1L/ha				
4Centium 36 CS	0,15L/ha				
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Betanal	1L/ha				
Betanal	1L/ha				
Pixxaro EC	0,125L/ha				
5Centium 36 CS	0,15L/ha				
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Pixxaro EC	0,075L/ha				
6Centium 36 CS	0,15L/ha				
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Pixxaro EC	0,075L/ha				
7Centium 36 CS	0,15L/ha				
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,125L/ha				
8Centium 36 CS	0,15L/ha				
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Venzar 500 SC	0,15L/ha				
Pixxaro EC	0,075L/ha				
Venzar 500 SC	0,15L/ha				
9Centium 36 CS	0,15L/ha				
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Asulox	0,5L/ha				
Pixxaro EC	0,075L/ha				
Asulox	0,5L/ha				

Pest Type	W; Weed	W; Weed	W; Weed		
Pest Code	VIOAR	GALAP	BBBBB		
Pest Scientific Name	Viola arvensis	Galium aparine	Broad-leaved plants		
Pest Name	Field pansy	Catchweed bedstraw	Broad-leaved plants		
Crop Code	SPQOL	SPQOL	SPQOL	SPQOL	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
Description					
Rating Date	15-06-2021	15-06-2021	15-06-2021	21-05-2021	31-05-2021
SE Name	W003	W003	W003	X001	X001
Part Rated	PLANT; -	PLANT; -	PLANT; -	PLANT; C	PLANT; C
Rating Type	CONTRO	CONTRO	CONTRO	PHYGEN	PHYGEN
Rating Unit	%	%	%	%	%
Calculation	NC	NC	NC	NC	NC
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Crop Stage Majority	61	61	61		
Pest Stage Majority	61	61			
Pest Stage Minimum/Maximum	61; 61				
Pest Density, Unit	11,5 PLA/m2	3 PLA/m2	6,25 PLA/m2		
Assessed By	AHK	AHK	AHK	PHA	PHA
Trt-Eval Interval	8 DA-G	8 DA-G	8 DA-G	4 DA-D	3 DA-E
Trt Treatment	5	6	7	1	2
No. Name					
10Centium 36 CS	0,15L/ha				
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Nortron SC	0,23L/ha				
Renol	0,5L/ha				
Pixxaro EC	0,075L/ha				
Nortron SC	0,23L/ha				
Renol	0,5L/ha				
11Centium 36 CS	0,15L/ha				
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Asulox	0,5L/ha				
Pixxaro EC	0,075L/ha				
Asulox	0,5L/ha				
12Centium 36 CS	0,15L/ha				
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Nortron SC	0,23L/ha				
Renol	0,5L/ha				
Pixxaro EC	0,075L/ha				
Nortron SC	0,23L/ha				
Renol	0,5L/ha				
13Centium 36 CS	0,15L/ha				
Venzar 500 SC	0,75L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Nortron SC	0,23L/ha				
Renol	0,5L/ha				
Pixxaro EC	0,075L/ha				
Nortron SC	0,23L/ha				
Renol	0,5L/ha				
14Roundup Bio	1,5L/ha				
LSD P=.05	15,04	10,45	9,90	9,30	5,45
Standard Deviation	10,49	7,29	6,90	6,50	3,81
CV	16,63	7,76	7,87	39,78	14,04
Grand Mean	63,08	93,92	87,67	16,34	27,14
Levene's F	1,863	70,37	0,694	1,625	1,021
Levene's Prob(F)	0,071	0,001*	0,747	0,116	0,45
Rank X2	.	.	.	.	.
P(Rank X2)	.	.	.	.	.
Skewness	-1,4494*	-3,7268*	-3,1287*	0,0035	-0,7068*
Kurtosis	3,7371*	13,2692*	9,1372*	-1,259*	0,2004

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Pest Type						
Crop Code		SPQOL	SPQOL	SPQOL	SPQOL	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
Description				Modenhed		
Rating Date		07-06-2021	15-06-2021	05-07-2021	20-07-2021	05-01-2022
SE Name		X001	X001	X001	X001	Y207A
Part Rated		PLANT; C	PLANT; C	PLANT; C	PLANT; C	SEED; -
Rating Type		PHYGEN	PHYGEN	PHYGEN	MATURI	WEIFRE
Rating Unit		%	%	%	%	KG
Calculation		NC	NC	NC	NC	NC
Sample Size, Unit		1 PLOT	1 PLOT	1 PLOT	1 PLOT	2 M2
Crop Stage Majority			61			
Pest Stage Majority						
Pest Stage Minimum/Maximum						
Pest Density, Unit						
Assessed By		PHA	AHK	PHA	PHA	
Trt-Eval Interval		0 DA-G	8 DA-G	28 DA-G	43 DA-G	
ARM Action Codes						
Trt No.	Treatment Name	Rate Rate	Other Unit	Other Rate	Other Unit	Appl Code
	1Untreated Check					
	2Centium 36 CS	0,15L/ha				A
	Roundup Bio	1,5L/ha				B
	Betanal	1L/ha				C
	Betanal	1L/ha				D
	3Centium 36 CS	0,15L/ha				A
	Proman	0,5L/ha				A
	Roundup Bio	1,5L/ha				B
	Betanal	1L/ha				C
	Betanal	1L/ha				D
	4Centium 36 CS	0,15L/ha				A
	Proman	0,5L/ha				A
	Roundup Bio	1,5L/ha				B
	Betanal	1L/ha				C
	Betanal	1L/ha				D
	Pixxaro EC	0,125L/ha				E
	5Centium 36 CS	0,15L/ha				A
	Proman	0,5L/ha				A
	Roundup Bio	1,5L/ha				B
	Pixxaro EC	0,05L/ha				C
	Pixxaro EC	0,075L/ha				E
	6Centium 36 CS	0,15L/ha				A
	Proman	0,5L/ha				A
	Roundup Bio	1,5L/ha				B
	Pixxaro EC	0,05L/ha				D
	Pixxaro EC	0,075L/ha				F
	7Centium 36 CS	0,15L/ha				A
	Proman	0,5L/ha				A
	Roundup Bio	1,5L/ha				B
	Pixxaro EC	0,125L/ha				E
	8Centium 36 CS	0,15L/ha				A
	Proman	0,5L/ha				A
	Roundup Bio	1,5L/ha				B
	Pixxaro EC	0,05L/ha				D
	Venzar 500 SC	0,15L/ha				D
	Pixxaro EC	0,075L/ha				F
	Venzar 500 SC	0,15L/ha				F
	9Centium 36 CS	0,15L/ha				A
	Proman	0,5L/ha				A
	Roundup Bio	1,5L/ha				B
	Pixxaro EC	0,05L/ha				D
	Asulox	0,5L/ha				D
	Pixxaro EC	0,075L/ha				F
	Asulox	0,5L/ha				F

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Pest Type	SPQOL	SPQOL	SPQOL	SPQOL	SPQOL
Crop Code	BVNH	BVNH	BVNH	BVNH	BVNH
BBCH Scale	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea
Crop Scientific Name	Spinach	Spinach	Spinach	Spinach	Spinach
Crop Name					
Description	Modenhed				
Rating Date	07-06-2021	15-06-2021	05-07-2021	20-07-2021	05-01-2022
SE Name	X001	X001	X001	X001	Y207A
Part Rated	PLANT; C	PLANT; C	PLANT; C	PLANT; C	SEED; -
Rating Type	PHYGEN	PHYGEN	PHYGEN	MATURI	WEIFRE
Rating Unit	%	%	%	%	KG
Calculation	NC	NC	NC	NC	NC
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	2 M2
Crop Stage Majority		61			
Pest Stage Majority					
Assessed By	PHA	AHK	PHA	PHA	
Trt-Eval Interval	0 DA-G	8 DA-G	28 DA-G	43 DA-G	
ARM Action Codes					
Trt No.	3	4	8	9	10
Treatment Name					
Rate					
Other Rate					
Other Rate					
Appl Code					
10Centium 36 CS	0,15L/ha				
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Nortron SC	0,23L/ha				
Renol	0,5L/ha				
Pixxaro EC	0,075L/ha				
Nortron SC	0,23L/ha				
Renol	0,5L/ha				
11Centium 36 CS	0,15L/ha				
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Asulox	0,5L/ha				
Pixxaro EC	0,075L/ha				
Asulox	0,5L/ha				
12Centium 36 CS	0,15L/ha				
Proman	0,5L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Nortron SC	0,23L/ha				
Renol	0,5L/ha				
Pixxaro EC	0,075L/ha				
Nortron SC	0,23L/ha				
Renol	0,5L/ha				
13Centium 36 CS	0,15L/ha				
Venzar 500 SC	0,75L/ha				
Roundup Bio	1,5L/ha				
Pixxaro EC	0,05L/ha				
Nortron SC	0,23L/ha				
Renol	0,5L/ha				
Pixxaro EC	0,075L/ha				
Nortron SC	0,23L/ha				
Renol	0,5L/ha				
14Roundup Bio	1,5L/ha				
LSD P=.05	7,93	13,48	5,66	19,24	0,09290
Standard Deviation	5,55	9,41	3,96	13,45	0,06490
CV	21,06	29,62	152,77	18,93	14,81
Grand Mean	26,34	31,79	2,59	71,07	0,43829
Levene's F	0,67	1,237	1,668	0,743	1,353
Levene's Prob(F)	0,78	0,29	0,105	0,712	0,224
Rank X2	.	.	.	.	.
P(Rank X2)	.	.	.	.	.
Skewness	0,0919	0,0044	2,1053*	-0,8449*	0,7801*
Kurtosis	-0,2845	-0,5611	3,633*	-0,3131	1,5494*

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Spinat strategi forsøg 2021.

Trial ID:21427-3

Location:Lystager Torp

Trial Year:2021

Protocol ID:21427

Investigator (Creator): Andrius Hansen Kemezys

Project ID:29894

Study Director:Peter Hartvig

Sponsor Contact:

Conducted Under GEP:Yes

				C; SPQOL	C; SPQOL	
Crop Type, Code				Spinacia oleracea	Spinacia oleracea	
Crop Scientific Name				Spinach	Spinach	
Crop Name						
Description						
Rating Date				05-01-2022	21-02-2022	
Part Rated				SEED; -	SEED; C	
Rating Type				YIEGRO	GERMIN	
Rating Unit/Min/Max				KG/HA; -; -	%; 0; 100	
Sample Size				1 PLOT	100 SEED	
Collection Basis				1 PLOT	1 PLOT	
Reporting Basis				1 HA	100 SEED	
Number of Subsamples				1	1	
Days After First/Last Applic.				257; 212	304; 259	
Trt-Eval Interval						
ARM Action Codes				@YLDKKGK[10] APOC		
Trt No.	Treatment Name	Description	Rate Unit	Appl Code	11	12
1	Untreated Check	not treated			2376a (100,0%)	92,3a
2	Centium 36 CS		0,15L/ha	A	2263a (95,2%)	91,0a
	Roundup Bio		1,5L/ha	B		
	Betanal		1L/ha	C		
	Betanal		1L/ha	D		
3	Centium 36 CS		0,15L/ha	A	2196a (92,4%)	93,3a
	Proman		0,5L/ha	A		
	Roundup Bio		1,5L/ha	B		
	Betanal		1L/ha	C		
	Betanal		1L/ha	D		
4	Centium 36 CS		0,15L/ha	A	2009a (84,5%)	90,3a
	Proman		0,5L/ha	A		
	Roundup Bio		1,5L/ha	B		
	Betanal		1L/ha	C		
	Betanal		1L/ha	D		
	Pixxaro EC		0,125L/ha	E		
5	Centium 36 CS		0,15L/ha	A	2075a (87,3%)	91,5a
	Proman		0,5L/ha	A		
	Roundup Bio		1,5L/ha	B		
	Pixxaro EC		0,05L/ha	C		
	Pixxaro EC		0,075L/ha	E		
6	Centium 36 CS		0,15L/ha	A	2084a (87,7%)	88,8a
	Proman		0,5L/ha	A		
	Roundup Bio		1,5L/ha	B		
	Pixxaro EC		0,05L/ha	D		
	Pixxaro EC		0,075L/ha	F		
7	Centium 36 CS		0,15L/ha	A	1960a (82,5%)	88,0a
	Proman		0,5L/ha	A		
	Roundup Bio		1,5L/ha	B		
	Pixxaro EC		0,125L/ha	E		
8	Centium 36 CS		0,15L/ha	A	2379a (100,1%)	83,8a
	Proman		0,5L/ha	A		
	Roundup Bio		1,5L/ha	B		
	Pixxaro EC		0,05L/ha	D		
	Venzar 500 SC		0,15L/ha	D		
	Pixxaro EC		0,075L/ha	F		
	Venzar 500 SC		0,15L/ha	F		

Means followed by same letter or symbol do not significantly differ ($P=0.05$, Student-Newman-Keuls).
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
 Missing data estimates are included in columns: Average=11

Crop Type, Code		C; SPQOL	C; SPQOL
Crop Scientific Name		Spinacia oleracea	Spinacia oleracea
Crop Name		Spinach	Spinach
Rating Date		05-01-2022	21-02-2022
Part Rated		SEED; -	SEED; C
Rating Type		YIEGRO	GERMIN
Rating Unit/Min/Max		KG/HA; -; -	%; 0; 100
Sample Size		1 PLOT	100 SEED
Collection Basis		1 PLOT	1 PLOT
Reporting Basis		1 HA	100 SEED
Number of Subsamples		1	1
Days After First/Last Applic.		257; 212	304; 259
Trt-Eval Interval			
ARM Action Codes		@YLDKKGKG[10] APOC	
Trt Treatment		11	12
No. Name	Description	Rate Unit	Appl Code
9	Centium 36 CS	0,15L/ha A	2344a
	Proman	0,5L/ha A	(98,6%)
	Roundup Bio	1,5L/ha B	
	Pixxaro EC	0,05L/ha D	
	Asulox	0,5L/ha D	
	Pixxaro EC	0,075L/ha F	
	Asulox	0,5L/ha F	
10	Centium 36 CS	0,15L/ha A	2316a
	Proman	0,5L/ha A	(97,5%)
	Roundup Bio	1,5L/ha B	
	Pixxaro EC	0,05L/ha D	
	Nortron SC	0,23L/ha D	
	Renol	0,5L/ha D	
	Pixxaro EC	0,075L/ha F	
	Nortron SC	0,23L/ha F	
	Renol	0,5L/ha F	
11	Centium 36 CS	0,15L/ha A	2323a
	Proman	0,5L/ha A	(97,7%)
	Roundup Bio	1,5L/ha B	
	Pixxaro EC	0,05L/ha E	
	Asulox	0,5L/ha E	
	Pixxaro EC	0,075L/ha G	
	Asulox	0,5L/ha G	
12	Centium 36 CS	0,15L/ha A	2167a
	Proman	0,5L/ha A	(91,2%)
	Roundup Bio	1,5L/ha B	
	Pixxaro EC	0,05L/ha E	
	Nortron SC	0,23L/ha E	
	Renol	0,5L/ha E	
	Pixxaro EC	0,075L/ha G	
	Nortron SC	0,23L/ha G	
	Renol	0,5L/ha G	
13	Centium 36 CS	0,15L/ha A	2150a
	Venzar 500 SC	0,75L/ha A	(90,5%)
	Roundup Bio	1,5L/ha B	
	Pixxaro EC	0,05L/ha D	
	Nortron SC	0,23L/ha D	
	Renol	0,5L/ha D	
	Pixxaro EC	0,075L/ha F	
	Nortron SC	0,23L/ha F	
	Renol	0,5L/ha F	
14	Roundup Bio	1,5L/ha B	2040a
			(85,8%)
LSD P=.05		464,5	8,24
Standard Deviation		324,5	5,76
CV		14,81	6,56
Grand Mean		2191,5	87,88
Levene's F		1,353	1,71
Levene's Prob(F)		0,224	0,094
Rank X2		.	.
Skewness		0,7801*	-1,3282*
Kurtosis		1,5494*	1,4607*

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat strategi forsøg 2021.

Trial ID:21427-3	Location:Lystager Torp	Trial Year:2021
Protocol ID:21427	Investigator:Andrius Hansen Kemezys	
Project ID:29894	Study Director:	
	Sponsor Contact:	

Conducted Under GEP:Yes

<p><u>Pest Type</u> W, Weed = Weed or volunteer crop</p> <p><u>Pest Code</u> VIOAR, Viola arvensis, Field pansy = IE GALAP, Galium aparine, Catchweed bedstraw = IE BBBBB, Broad-leaved plants, Broad-leaved plants = IE</p> <p><u>Crop Code</u> SPQOL, BVNH, Spinacia oleracea, Spinach = US</p> <p><u>SE Name</u> W003 = A1 X001 = A1 Y207_C2 = A1 @YLDKGKG[1]</p> <p><u>Part Rated</u> PLANT = plant SEED = seed C = Crop is Part Rated</p> <p><u>Rating Type</u> CONTRO = control / burndown or knockdown PHYGEN = phytotoxicity - general / injury MATURI = maturity WEIFRE = weight - fresh YIEGRO = yield - gross</p> <p><u>Rating Unit</u> % = percent KG = kilogram KG/HA = kilograms per hectare</p> <p><u>Calculation</u> NC = no calculation IN = increase</p> <p>PLOT = total plot M2 = square meter</p> <p><u>Crop Stage Majority</u> 61 = Beginning of flowering: 10% of flowers open BVNH</p> <p><u>Pest Stage Majority</u> 61 = Beginning of flowering: 10% of flowers open</p> <p><u>Pest Stage Minimum/Maximum</u> 61 = Beginning of flowering: 10% of flowers open</p> <p>PLA/m2 = plants per square meter</p> <p><u>Assessed By</u> AHK = Andrius Hansen Kemezys</p> <p><u>ARM Action Codes</u> APOC = Automatic percent control (Control forced to 100% on AOV Means Table) @YLDKGKG[10] = &[10]/[C10HEBS]*10000</p>
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Aarhus University, Department of Agroecology, Flakkebjerg

Pest Type					W: Weed	W: Weed	W: Weed					
Pest Code					VIOAR	GALAP	BBBBB					
Pest Scientific Name					Viola arvensis	Galium aparine	Broad-leaved plants					
Pest Name					Field pansy	Catchweed bedstraw	Broad-leaved plants					
Crop Code	SPQOL	SPQOL	SPQOL	SPQOL	SPQOL	SPQOL	SPQOL					
BBCH Scale	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH					
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea					
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach					
Description												
Rating Date	21-05-2021	31-05-2021	07-06-2021	15-06-2021	15-06-2021	15-06-2021	15-06-2021					
SE Name	X001	X001	X001	X001	W003	W003	W003					
Part Rated	PLANT: C	PLANT: C	PLANT: C	PLANT: C	PLANT: -	PLANT: -	PLANT: -					
Rating Type	PHYGEN	PHYGEN	PHYGEN	PHYGEN	CONTRO	CONTRO	CONTRO					
Rating Unit	%	%	%	%	%	%	%					
Calculation	NC	NC	NC	NC	NC	NC	NC					
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT					
Crop Stage Majority					61	61	61					
Pest Stage Majority					61	61	61					
Pest Stage Minimum/Maximum					61; 61	61; 61	61; 61					
Pest Density, Unit					11,5 PLA/m2	3 PLA/m2	6,25 PLA/m2					
Assessed By	PHA	PHA	PHA	AHK	AHK	AHK	AHK					
Trt-Eval Interval	4 DA-D	3 DA-E	0 DA-G	8 DA-G	8 DA-G	8 DA-G	8 DA-G					
ARM Action Codes												
Trt Treatment	Rate	Other	Other	Appl								
No. Name	Rate Unit	Rate	Rate Unit	Code	Plot	1	2					
						3	4					
						5	6					
						7						
10Centium 36 CS	0,15L/ha			A	113	20,0	50,0	45,0	45,0	75,0	100,0	95,0
Proman	0,5L/ha			A	210	10,0	40,0	50,0	40,0	45,0	100,0	90,0
Roundup Bio	1,5L/ha			B	305	30,0	40,0	60,0	65,0	70,0	100,0	95,0
Pixxaro EC	0,05L/ha			D	412	35,0	45,0	55,0	70,0	70,0	100,0	85,0
Nortron SC	0,23L/ha			D								
Renol	0,5L/ha			D								
Pixxaro EC	0,075L/ha			F								
Nortron SC	0,23L/ha			F								
Renol	0,5L/ha			F								
					Mean =	23,8	43,8	52,5	55,0	65,0	100,0	91,3
11Centium 36 CS	0,15L/ha			A	106	0,0	30,0	15,0	20,0	70,0	100,0	100,0
Proman	0,5L/ha			A	214	10,0	35,0	25,0	40,0	70,0	100,0	92,0
Roundup Bio	1,5L/ha			B	309	10,0	25,0	15,0	40,0	65,0	100,0	100,0
Pixxaro EC	0,05L/ha			E	402	10,0	25,0	20,0	30,0	70,0	100,0	93,0
Asulox	0,5L/ha			E								
Pixxaro EC	0,075L/ha			G								
Asulox	0,5L/ha			G								
					Mean =	7,5	28,8	18,8	32,5	68,8	100,0	96,3
12Centium 36 CS	0,15L/ha			A	102	20,0	30,0	30,0	50,0	70,0	100,0	90,0
Proman	0,5L/ha			A	212	20,0	35,0	35,0	45,0	60,0	100,0	92,0
Roundup Bio	1,5L/ha			B	303	10,0	20,0	25,0	55,0	70,0	100,0	95,0
Pixxaro EC	0,05L/ha			E	407	0,0	25,0	20,0	55,0	70,0	100,0	99,0
Nortron SC	0,23L/ha			E								
Renol	0,5L/ha			E								
Pixxaro EC	0,075L/ha			G								
Nortron SC	0,23L/ha			G								
Renol	0,5L/ha			G								
					Mean =	12,5	27,5	27,5	51,3	67,5	100,0	94,0
13Centium 36 CS	0,15L/ha			A	105	40,0	55,0	60,0	70,0	95,0	100,0	99,0
Venzar 500 SC	0,75L/ha			A	211	30,0	40,0	50,0	35,0	55,0	100,0	100,0
Roundup Bio	1,5L/ha			B	301	35,0	40,0	50,0	60,0	65,0	100,0	100,0
Pixxaro EC	0,05L/ha			D	404	35,0	40,0	50,0	65,0	70,0	100,0	99,0
Nortron SC	0,23L/ha			D								
Renol	0,5L/ha			D								
Pixxaro EC	0,075L/ha			F								
Nortron SC	0,23L/ha			F								
Renol	0,5L/ha			F								
					Mean =	35,0	43,8	52,5	57,5	71,3	100,0	99,5
14Roundup Bio	1,5L/ha			B	101	0,0	0,0	0,0	0,0	60,0	40,0	0,0
					209	0,0	0,0	0,0	0,0	0,0	0,0	0,0
					311	0,0	0,0	0,0	0,0	20,0	50,0	0,0
					414	0,0	0,0	0,0	0,0	30,0	0,0	40,0
					Mean =	0,0	0,0	0,0	0,0	27,5	22,5	10,0

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat strategi forsøg 2021.

Trial ID:21427-3

Location:Lystager Torp

Trial Year:2021

Protocol ID:21427

Investigator (Creator): Andrius Hansen Kemezys

Project ID:29894

Study Director:Peter Hartvig

Sponsor Contact:

Conducted Under GEP:Yes

Crop Type, Code	C: SPQOL	C: SPQOL	C: SPQOL	C: SPQOL	C: SPQOL						
Crop Scientific Name	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea						
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach						
Description		Modenhed									
Rating Date	05-07-2021	20-07-2021	05-01-2022	05-01-2022	21-02-2022						
Part Rated	PLANT; C	PLANT; C	SEED; -	SEED; -	SEED; C						
Rating Type	PHYGEN	MATURI	WEIFRE	YIEGRO	GERMIN						
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	KG; -; -	KG/HA; -; -	%; 0; 100						
Sample Size	1 PLOT	1 PLOT	2 M2	1 PLOT	100 SEED						
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT						
Reporting Basis	1 PLOT	1 PLOT	1 PLOT	1 HA	100 SEED						
Number of Subsamples	1	1	1	1	1						
Days After First/Last Applic.	73; 28	88; 43	257; 212	257; 212	304; 259						
Trt-Eval Interval	28 DA-G	43 DA-G									
ARM Action Codes				@YLDKGKG[10] APOC							
Trt Treatment	Rate	Appl									
No.	Name	Description	Rate	Unit	Code	Plot	8	9	10	11	12
1	Untreated Check	not treated				108	0	85	1	2785	88,0
						203	0	90	1	2655	95,0
						313	0	90	0	1970	92,0
						406	0	85	0	2095	94,0
						Mean =	0	88	0	2376	92,3
2	Centium 36 CS	0,15L/ha	A	114	0	85	0	85	0	2300	85,0
	Roundup Bio	1,5L/ha	B	201	0	90	0	90	0	2155	93,0
	Betanal	1L/ha	C	310	0	80	0	80	0	2420	90,0
	Betanal	1L/ha	D	408	0	60	0	60	0	2175	96,0
				Mean =	0	79	0	79	0	2263	91,0
3	Centium 36 CS	0,15L/ha	A	107	0	75	0	75	0	2375	95,0
	Proman	0,5L/ha	A	205	10	50	0	50	0	2475	93,0
	Roundup Bio	1,5L/ha	B	308	0	90	0	90	0	2025	93,0
	Betanal	1L/ha	C	401	0	80	0	80	0	1910	92,0
	Betanal	1L/ha	D								
				Mean =	3	74	0	74	0	2196	93,3
4	Centium 36 CS	0,15L/ha	A	109	20	70	0	70	0	1675	85,0
	Proman	0,5L/ha	A	204	10	80	0	80	0	2475	91,0
	Roundup Bio	1,5L/ha	B	312	0	90	0	90	0	2275	92,0
	Betanal	1L/ha	C	410	0	80	0	80	0	1610	93,0
	Betanal	1L/ha	D								
	Pixxaro EC	0,125L/ha	E								
				Mean =	8	80	0	80	0	2009	90,3
5	Centium 36 CS	0,15L/ha	A	112	0	80	0	80	0	1860	91,0
	Proman	0,5L/ha	A	206	0	60	0	60	0	2440	90,0
	Roundup Bio	1,5L/ha	B	304	0	85	0	85	0	2000	95,0
	Pixxaro EC	0,05L/ha	C	409	0	80	0	80	0	2000	90,0
	Pixxaro EC	0,075L/ha	E								
				Mean =	0	76	0	76	0	2075	91,5
6	Centium 36 CS	0,15L/ha	A	104	0	80	0	80	0	2260	90,0
	Proman	0,5L/ha	A	202	0	70	0	70	0	2300	86,0
	Roundup Bio	1,5L/ha	B	307	0	80	0	80	0	1910	92,0
	Pixxaro EC	0,05L/ha	D	413	0	40	0	40	0	1865	87,0
	Pixxaro EC	0,075L/ha	F								
				Mean =	0	68	0	68	0	2084	88,8
7	Centium 36 CS	0,15L/ha	A	110	20	80	0	80	0	1470	81,0
	Proman	0,5L/ha	A	213	0	85	0	85	0	1935	92,0
	Roundup Bio	1,5L/ha	B	306	0	70	0	70	0	2210	87,0
	Pixxaro EC	0,125L/ha	E	403	0	70	0	70	0	2225	92,0
				Mean =	5	76	0	76	0	1960	88,0
8	Centium 36 CS	0,15L/ha	A	111	0	75	0	75	0	2225	87,0
	Proman	0,5L/ha	A	208	0	80	1	80	1	3375	74,0
	Roundup Bio	1,5L/ha	B	314	0	70	0	70	0	1900	87,0
	Pixxaro EC	0,05L/ha	D	405	0	75	0	75	0	2015	87,0
	Venzar 500 SC	0,15L/ha	D								
	Pixxaro EC	0,075L/ha	F								
	Venzar 500 SC	0,15L/ha	F								
				Mean =	0	75	0	75	0	2379	83,8
9	Centium 36 CS	0,15L/ha	A	103	0	65	1	65	1	2745	84,0
	Proman	0,5L/ha	A	207	0	80	1	80	1	2505	84,0
	Roundup Bio	1,5L/ha	B	302	0	75	0	75	0	2155	85,0
	Pixxaro EC	0,05L/ha	D	411	0	70	0	70	0	1970	93,0
	Asulox	0,5L/ha	D								
	Pixxaro EC	0,075L/ha	F								
	Asulox	0,5L/ha	F								
				Mean =	0	73	0	73	0	2344	86,5

Aarhus University, Department of Agroecology, Flakkebjerg

Crop Type, Code					C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL		
Crop Scientific Name					Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea	Spinacia oleracea		
Crop Name					Spinach	Spinach	Spinach	Spinach	Spinach		
Description						Modenhed					
Rating Date					05-07-2021	20-07-2021	05-01-2022	05-01-2022	21-02-2022		
Part Rated					PLANT; C	PLANT; C	SEED; -	SEED; -	SEED; C		
Rating Type					PHYGEN	MATUR	WEIFRE	YIEGRO	GERMIN		
Rating Unit/Min/Max					%; 0; 100	%; 0; 100	KG; -; -	KG/HA; -; -	%; 0; 100		
Sample Size					1 PLOT	1 PLOT	2 M2	1 PLOT	100 SEED		
Collection Basis					1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT		
Reporting Basis					1 PLOT	1 PLOT	1 PLOT	1 HA	100 SEED		
Number of Subsamples					1	1	1	1	1		
Days After First/Last Applic.					73; 28	88; 43	257; 212	257; 212	304; 259		
Trt-Eval Interval					28 DA-G	43 DA-G					
ARM Action Codes								@YLDKGGK[10] APOC			
Trt	Treatment	Rate	Appl								
No.	Name	Description	Rate	Unit	Code	Plot	8	9	10	11	12
10	Centium 36 CS		0,15L/ha	A		113	10	50	0	1890	78,0
	Proman		0,5L/ha	A		210	10	40	1	2675	85,0
	Roundup Bio		1,5L/ha	B		305	10	35	1	2925	91,0
	Pixxaro EC		0,05L/ha	D		412	5	90	0	1775	89,0
	Nortron SC		0,23L/ha	D							
	Renol		0,5L/ha	D							
	Pixxaro EC		0,075L/ha	F							
	Nortron SC		0,23L/ha	F							
	Renol		0,5L/ha	F							
						Mean =	9	54	0	2316	85,8
11	Centium 36 CS		0,15L/ha	A		106	0	80	0	2110	86,0
	Proman		0,5L/ha	A		214	0	60	0	2265	69,0
	Roundup Bio		1,5L/ha	B		309	0	80	0	2265	93,0
	Pixxaro EC		0,05L/ha	E		402	0	60	1	2650	70,0
	Asulox		0,5L/ha	E							
	Pixxaro EC		0,075L/ha	G							
	Asulox		0,5L/ha	G							
						Mean =	0	70	0	2323	79,5
12	Centium 36 CS		0,15L/ha	A		102	0	40	0	1945	82,0
	Proman		0,5L/ha	A		212	0	50	0	2290	91,0
	Roundup Bio		1,5L/ha	B		303	0	50	0	2265	80,0
	Pixxaro EC		0,05L/ha	E		407	0	85			77,0
	Nortron SC		0,23L/ha	E							
	Renol		0,5L/ha	E							
	Pixxaro EC		0,075L/ha	G							
	Nortron SC		0,23L/ha	G							
	Renol		0,5L/ha	G							
						Mean =	0	56	0	2167	82,5
13	Centium 36 CS		0,15L/ha	A		105	20	40	0	1820	92,0
	Venzar 500 SC		0,75L/ha	A		211	10	60	0	2380	85,0
	Roundup Bio		1,5L/ha	B		301	10	60	0	2080	91,0
	Pixxaro EC		0,05L/ha	D		404	10	45	0	2320	71,0
	Nortron SC		0,23L/ha	D							
	Renol		0,5L/ha	D							
	Pixxaro EC		0,075L/ha	F							
	Nortron SC		0,23L/ha	F							
	Renol		0,5L/ha	F							
						Mean =	13	51	0	2150	84,8
14	Roundup Bio		1,5L/ha	B		101	0	80	0	2000	96,0
						209	0	75	0	2385	88,0
						311	0	80	0	2035	94,0
						414	0	70	0	1740	92,0
						Mean =	0	76	0	2040	92,5

Aarhus University, Department of Agroecology, Flakkebjerg**Spinat strategi forsøg 2021.**

Trial ID:21427-3 Location:Lystager Torp Trial Year:2021
 Protocol ID:21427 Investigator:Andrius Hansen Kemezys
 Project ID:29894 Study Director:
 Sponsor Contact:

Conducted Under GEP:Yes

<p><u>Pest Type</u> W, Weed = Weed or volunteer crop</p> <p><u>Pest Code</u> VIOAR, Viola arvensis, Field pansy = IE GALAP, Galium aparine, Catchweed bedstraw = IE BBBBB, Broad-leaved plants, Broad-leaved plants = IE</p> <p><u>Crop Code</u> SPQOL, BVNH, Spinacia oleracea, Spinach = US</p> <p><u>SE Name</u> X001 = A1 W003 = A1 Y207_C2 = A1 @YLDKGGK[1]</p> <p><u>Part Rated</u> PLANT = plant SEED = seed C = Crop is Part Rated</p> <p><u>Rating Type</u> PHYGEN = phytotoxicity - general / injury CONTRO = control / burndown or knockdown MATURI = maturity WEIFRE = weight - fresh YIEGRO = yield - gross</p> <p><u>Rating Unit</u> % = percent KG = kilogram KG/HA = kilograms per hectare</p> <p><u>Calculation</u> NC = no calculation IN = increase</p> <p>PLOT = total plot M2 = square meter</p> <p><u>Crop Stage Majority</u> 61 = Beginning of flowering: 10% of flowers open/BVNH</p> <p><u>Pest Stage Majority</u> 61 = Beginning of flowering: 10% of flowers open</p> <p><u>Pest Stage Minimum/Maximum</u> 61 = Beginning of flowering: 10% of flowers open</p> <p>PLA/m2 = plants per square meter</p> <p><u>Assessed By</u> AHK = Andrius Hansen Kemezys</p> <p><u>ARM Action Codes</u> APOC = Automatic percent control (Control forced to 100% on AOV Means Table) @YLDKGGK[10] = &[10]/[C10HEBS]*10000</p>
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Aarhus University, Department of Agroecology, Flakkebjerg

Spinat stress forsøg med analyse for selfings.

Trial ID:21428 Location:AU Flakkebjerg Trial Year:2021
 Protocol ID:21428 Investigator (Creator):Andrius Hansen Kemezys
 Project ID:29894 Study Director:Peter Hartvig
 Sponsor Contact:

General Trial Information

Study Director:Peter Hartvig **Title:**Study director
Investigator:Andrius Hansen Kemezys **Title:**Academic employee

Discipline:H herbicide **Trial Reliability:**HIGH high quality
Trial Status:F final (completed)
ARM Trial Created On:19-04-2021
Initiation Date:17-05-2021 **Planned Completion Date:**17-03-2021

Trial Location

City:AU Flakkebjerg **Country:**DNK Denmark
State/Prov.:Slagelse **Climate Zone:**EPOMAR EPPO Maritime

Latitude of LL Corner °:55,321787 N
Longitude of LL Corner °:11,401661 E

Conducted Under GLP:No
Conducted Under GEP:Yes

Conclusions:

Forsøget blev udført på forskningscentret AU Flakkebjerg. Forsøget blev udført på dampbehandlet ukrudtsfri areal. Forsøget har til formål at undersøge, om stress på spinat kan forårsage såkaldte selvbestøvere (selfings) og nedsætte frøkvalitet. Der har tidligere været mistanke, at behandling med Pixxaro kan forårsage 'selfings', men seneste års analyse viste, at behandlingerne med Proman også resulterede i 'selfings'. Midlerne Pixxaro og Proman, samt mekanisk stress i form af tromling blev testet i høje doser på forskellige tids-punkter for at stress spinat. Der er udført løbende bedømmelser for kulturskade, frø udbytte og analyse for 'selfings'.

Vejret i starten af forsøgsperioden kan beskrives som koldt og meget tørt, i maj måneder var nedbørsmængden dog noget over det normale, ca. 125%. sommermånederne juni og juli var med temperatur lidt over normalen, nedbørsmængden var især i juni meget under normalen 56% lavere. I juli var nedbørsmængden næsten normal, men med store variationer fra landsdel til landsdel.

Forsøget blev behandlet 4 gange: behandling A ved BBCH 12 blev udført den 17. maj, behandling B – ved BBCH 16 den 28. maj, behandling C – ved BBCH 31 den 2. juni og behandling D ved BBCH 33 den 9. juni.

Forsøget blev bedømt for kulturskade 6 gange igennem vækstsæsonen, samt at der blev bedømt for angreb af skimmel den 12. juli, samt modenhed og frøsetning den 22. juli. Forsøget blev høstet den 2. august for udbyttmåling, og frøprøverne til analyse for selvbestøvere (selfings) blev gemt og sendt til laboratorie efterfølgende.

Som forventet har behandlingerne med Pixxaro og Proman skadet spinat. Der var tydelig tendens til, at jo højere dosering af hhv. Pixxaro og Proman var i behandling, jo større skade der var. Tromling så ud til at skade spinat kun i meget kort tid efter behandling, og spinat kunne hurtig komme sig. Behandlingerne med Pixxaro og Proman resulterede i mere langvarige skader, men spinat synes at kunne komme sig fra skaderne. Ved den sidste bedømmelse for skade den 12. juli var der kun behandling 6 med 0,2 l/ha Pixxaro ved C tidspunkt som var signifikant skadet (25% kulturskade) i forhold til ubehandlet.

Der blev observeret, at de led, som blev behandlet med Pixxaro og Proman blev angrebet af skimmel i mindre grad i forhold til ubehandlet og de tromlede led, dog ikke signifikant. Dette kunne muligvis forklares, at spinatplanter blev forsinket i udvikling på grund af herbicidskader.

Udbytteresultater viste, at der blev målt 1424 kg/ha spinat frø i ubehandlet. Led 6 med 0,2 l/ha Pixxaro var den, som resulterede i den laveste udbytte af 738 kg/ha (51,8% af det ubehandlet, dog ikke signifikant forskellig fra ubehandlet). De øvrige led med Pixxaro og Proman har også negativt påvirket udbytte, dog i mindre omfang (3-30% reduktion af udbytte i forhold til ubehandlet, ingen signifikante forskelle). Der blev observeret, at led 11 med tromling ved D tidspunkt resulterede i 12% højere udbytte end i ubehandlet. Udbytteresultater viste ingen signifikante forskelle mellem ubehandlet og de øvrige led. Der blev dog observeret signifikant forskel mellem led 6 (0,2 l/ha Pixxaro) og led 11 med tromling ved D tidspunkt.

Der blev udtaget frøprøver for analyser for selvbestøvere (selfings). Analysen viste, at alle led med Pixxaro resulterede i højere andel af selvbestøvere (0,27-0,51%) end ubehandlet kontrol (0,12%). Desuden blev der observeret, at der var højere andel af selvbestøvere i de led med højeste dosering af Pixxaro. Behandlingerne med Proman, tromling og reference behandling med Betanal resulterede i nogenlunde samme andel af selvbestøvere (0,09-0,23%) som i ubehandlet kontrol (0,12%). Resultaterne af analysen for selvbestøvere er ikke inkluderet i denne rapport.

Spiringsanalyse for spirehastighed og spireevne har påvist, at led 3, 5 og 6 med Pixxaro har signifikant nedsat spireevne i forhold til ubehandlet (op til 45% reduktion i spireevne). Der blev observeret tendens til, at split behandlinger af 0,05 og 0,075 l/ha Pixxaro ikke har nedsat spireevne i så høj grad som enkelte behandlinger med henholdsvis 0,125 og 0,2 l/ha. Behandlingerne med Betanal, Proman eller mekanisk tromling har ikke påvirket spireevne i forhold til ubehandlet.

Contacts

Role:STYDIR study director
Study Director:Peter Hartvig
Organization:Dept. of Agroecology, Aarhus University
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City:Flakkebjerg
Role:INVEST investigator
Investigator:Andrius Hansen Kemezy
Organization:Aarhus University, Department of Agroecology
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Crop Description

Crop 1:C SPQOL Spinacia oleracea Spinach **BBCH Scale:**BVNH
Entry Date:13-01-2022 **Stage Scale:**BBCH
Planting Date:08-04-2021 **Planting Rate:**25 S/m
Harvested Width:1 m
Harvested Length:2 m

Site and Design

Treated Plot Width:2,5 m **Site Type:**FIELD field
Treated Plot Length:10 m **Experimental Unit:**1 PLOT plot
Treated Plot Area:25,0 m² **Treatments:**11 **Tillage Type:**CONTIL conventional-till
Replications:4 **Study Design:**RACOBL Randomized Complete Block (RCB)

Weather Conditions

Overall Moisture Conditions:NORMAL normal
Closest Weather Station:AU Flakkebjerg **Distance:**500 m

Application Description

	A	B	C	D
Application Date	17-05-2021	28-05-2021	02-06-2021	09-06-2021
Appl. Start Time	10:30	10:00	14:45	07:10
Appl. Stop Time	11:00	10:30	15:10	07:20
Application Method	SPRAY	SPRAY	SPRAY	SPRAY
Application Placement	FOLIAR	FOLIAR	FOLIAR	FOLIAR
Applied By	PEA	AHK	AHK	AHK
Appl. Entry Date	04-08-2021	04-08-2021	04-08-2021	04-08-2021
Air Temperature Start, Stop	-; 13,1 C	-; 15 C	-; 21 C	-; 15,8 C
% Relative Humidity Start, Stop	-; 71	-; 67,4	-; 49,9	-; 76,3
Wind Velocity+Dir. Start	4,4 MPS; SW	5,6 MPS; NW	3,1 MPS; SE	1,7 MPS; W
Wet Leaves (Y/N)	N; no	N; no	N; no	N; no
Soil Temperature		12 C	22,6 C	17,9 C
Soil Moisture	SLIWET	SLIWET	DRY	DRY
Soil Surface Condition	COARSE	COARSE	COARSE	COARSE
% Cloud Cover	50	10	0	0

Comment:

Led 10 og led 11 blev tromlet med traktortromle.

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	12; -	16; -	31; -	33; -

Pest Stage At Each Application

	A	B	C	D
Pest 1 Code, Type, Scale	-; -; BBCH			

Pest 2 Code, Type, Scale	-; -; BBCH			
Pest 3 Code, Type, Scale	-; -; BBCH			
Pest 4 Code, Type, Scale	-; -; BBCH			
Pest 5 Code, Type, Scale	-; -; BBCH			
Pest 6 Code, Type, Scale	-; -; BBCH			
Pest 7 Code, Type, Scale	-; -; BBCH			

Application Equipment				
	A	B	C	D
Appl. Equipment	Selvkørende	Selvkørende	Selvkørende	Selvkørende
Equipment Type	SPRAYE	SPRAYE	SPRAYE	SPRAYE
Operation Pressure	3.8 BAR	3.8 BAR	3.8 BAR	3.8 BAR
Nozzle Model	LD015-110	LD015-110	LD015-110	LD015-110
Nozzle Type	Hardi	Hardi	Hardi	Hardi
Nozzle Spacing	50 cm	50 cm	50 cm	50 cm
Nozzles/Row	5	5	5	5
Boom Length	25 m	25 m	25 m	25 m
Boom Height	50 cm	50 cm	50 cm	50 cm
Ground Speed	3,6 KPH	3,6 KPH	3,6 KPH	3,6 KPH
Application Amount	200 L/ha	200 L/ha	200 L/ha	200 L/ha
Mix Size	4 liters	4 liters	4 liters	4 liters

Notes			
Context	Date	By	Notes
STATUS	19-04-2021	Andrius Hansen Kemezys	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	04-08-2021	Andrius Hansen Kemezys	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

SE Definitions	
	1.
SE Name	X001
SE Description	% General phyto on plants (all symptoms)
Part Rated	PLANT; -
Rating Type	PHYGEN
Rating Unit/Min/Max	%; -; -
Sample Size	1 PLOT
Collection Basis	1 PLOT
Reporting Basis	1 PLOT
Calculation	NC

Instructions:
Udføres på dampbehandlet ukrudtsfri areal.

Registreringer:

Timing	Nr.	Registreringer (ARM code)
Ved beh. C	1, 2	BBCH, PHYGEN
Ved beh. D	1, 2	BBCH, PHYGEN
2 uger efter D	1, 2	BBCH, PHYGEN
4 uger efter D	1, 2	BBCH, PHYGEN
Ved høst	3	Indsamling af frø til analyser for 'selfings'.

Nr	ARM code	SE name	Beskrivelse
1	BBCH		BBCH for afgrøde.
2	PHYGEN	X001	Skade på afgrøder (%).
3			Analyser for 'selfings'.

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat stress forsøg med analyse for selfings.

Trial ID:21428 Location:AU Flakkebjerg Trial Year:2021
 Protocol ID:21428 Investigator:Andrius Hansen Kemezys
 Project ID:29894 Study Director:
 Sponsor Contact:

Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Appl Code	Appl Description	Spray Volume	Volume Unit
1	CHK	Untreated Check									
2	HERB	Betanal	160	gA/L	SC	1	L/ha	A	BBCH 12-14	200	L/ha
	HERB	Betanal	160	gA/L	SC	1	L/ha	B	BBCH 14-16	200	L/ha
3	HERB	Pixxaro EC	305	gA/L	EC	0,05	L/ha	A	BBCH 12-14	200	L/ha
	HERB	Pixxaro EC	305	gA/L	EC	0,075	L/ha	C	BBCH 16-18	200	L/ha
4	HERB	Pixxaro EC	305	gA/L	EC	0,05	L/ha	B	BBCH 14-16	200	L/ha
	HERB	Pixxaro EC	305	gA/L	EC	0,075	L/ha	D	1 uge efter C	200	L/ha
5	HERB	Pixxaro EC	305	gA/L	EC	0,125	L/ha	C	BBCH 16-18	200	L/ha
6	HERB	Pixxaro EC	305	gA/L	EC	0,2	L/ha	C	BBCH 16-18	200	L/ha
7	HERB	Proman	500	gA/L	SC	0,15	L/ha	B	BBCH 14-16	200	L/ha
	HERB	Proman	500	gA/L	SC	0,15	L/ha	C	BBCH 16-18	200	L/ha
8	HERB	Proman	500	gA/L	SC	0,15	L/ha	B	BBCH 14-16	200	L/ha
	HERB	Proman	500	gA/L	SC	0,3	L/ha	C	BBCH 16-18	200	L/ha
9	HERB	Proman	500	gA/L	SC	0,15	L/ha	B	BBCH 14-16	200	L/ha
	HERB	Proman	500	gA/L	SC	0,6	L/ha	C	BBCH 16-18	200	L/ha
10	CULT	Tromling						C	BBCH 16-18		
11	CULT	Tromling						D	1 uge efter C		

Additional Treatment Information

Type
 CHK = Check or Untreated
 HERB = Herbicide
 CULT = Cultural practice

Treatment Name
 Untreated Check, , , = Not treated|
 Betanal, 160, gA/L, SC = phenmedipham|160|
 Pixxaro EC, 305, gA/L, EC = fluroxypyr+halauxifen-methyl+cloquintocet-mexyl|280+12,5+12,5|
 Proman, 500, gA/L, SC = metobromuron|500|

Form Unit
 gA/L = grams active ingredient per litre formulated product

Form Type
 SC = suspension concentrate (= flowable concentrate)|Liquid||A stable suspension of active ingredient(s) in water, intended for dilution with water before use.
 EC = emulsifiable concentrate|Liquid||A liquid, homogeneous formulation to be applied as an emulsion after dilution in water.

Rate Unit
 L/ha = Liters Product per Hectare (US=GAL/A)|T

Volume Unit
 L/ha = litres per hectare

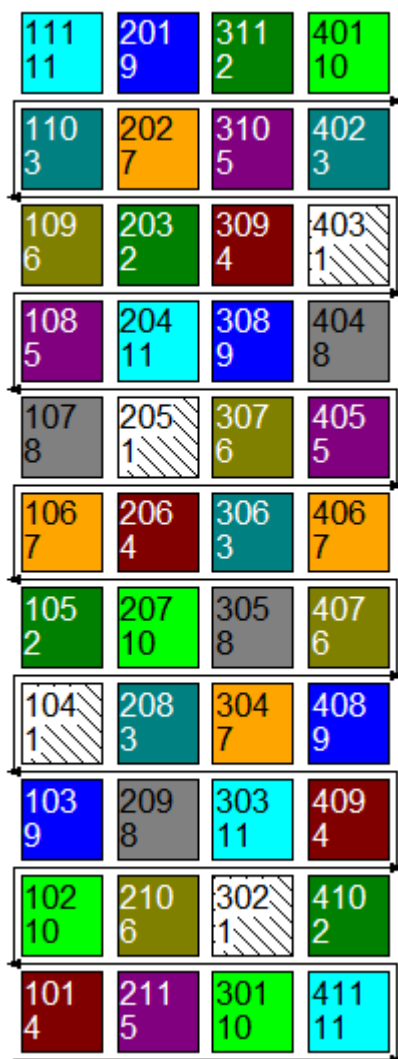
Aarhus University, Department of Agroecology, Flakkebjerg

Spinat stress forsøg med analyse for selfings.

Trial ID:21428	Location:AU Flakkebjerg	Trial Year:2021
Protocol ID:21428	Investigator:Andrius Hansen Kemezys	
Project ID:29894	Study Director:	
	Sponsor Contact:	

Trial Map Treatment Description

Trt	Code	Description
1	CHK	Untreated Check
2		Betanal 1 L/ha;Betanal 1 L/ha
3		Pixxaro EC 0.05 L/ha;Pixxaro EC 0.075 L/ha
4		Pixxaro EC 0.05 L/ha;Pixxaro EC 0.075 L/ha
5		Pixxaro EC 0.125 L/ha
6		Pixxaro EC 0.2 L/ha
7		Proman 0.15 L/ha;Proman 0.15 L/ha
8		Proman 0.15 L/ha;Proman 0.3 L/ha
9		Proman 0.15 L/ha;Proman 0.6 L/ha
10		Tromling
11		Tromling



Aarhus University, Department of Agroecology, Flakkebjerg

Spinat stress forsøg med analyse for selfings.

Trial ID:21428	Location:AU Flakkebjerg	Trial Year:2021	
Protocol ID:21428	Investigator (Creator):Andrius Hansen Kemezys		
Project ID:29894	Study Director:Peter Hartvig		
	Sponsor Contact:		

Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
BBCB Scale	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH	BVNH
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach
Description							% Skimmel
Rating Date	31-05-2021	04-06-2021	11-06-2021	18-06-2021	28-06-2021	12-07-2021	12-07-2021
SE Name	X001	X001	X001	X001	X001	X001	X001
Part Rated	PLANT; C	PLANT; C	PLANT; C	PLANT; C	PLANT; C	PLANT; C	PLANT; P
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
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Reporting Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Days After First/Last Applic.	14; 3	18; 2	25; 2	32; 9	42; 19	56; 33	56; 33
Trt-Eval Interval	3 DA-B	2 DA-C	2 DA-D	9 DA-D	19 DA-D	33 DA-D	33 DA-D
ARM Action Codes							
Trt Treatment	1	2	3	4	5	6	7
No. Name							
1Untreated Check	0,0c	0,0c	0,0e	0,0g	0,0e	0,0b	86,3a
2Betanal	1L/ha						
Betanal	1L/ha						
3Pixxaro EC	0,05L/ha						
Pixxaro EC	0,075L/ha						
4Pixxaro EC	0,05L/ha						
Pixxaro EC	0,075L/ha						
5Pixxaro EC	0,125L/ha						
6Pixxaro EC	0,2L/ha						
7Proman	0,15L/ha						
Proman	0,15L/ha						
8Proman	0,15L/ha						
Proman	0,3L/ha						
9Proman	0,15L/ha						
Proman	0,6L/ha						
10Tromling							
11Tromling							
LSD P=.05	7,14	8,34	7,75	5,49	5,70	7,61	33,51
Standard Deviation	4,80	5,75	5,37	3,80	3,95	5,27	23,17
CV	45,5	27,87	24,87	24,26	42,92	136,38	34,04
Grand Mean	10,56	20,63	21,59	15,68	9,20	3,86	68,07
Levene's F	2,346	0,923	0,953	1,613	1,522	3,523	1,382
Levene's Prob(F)	0,068	0,519	0,50	0,146	0,176	0,003*	0,233
Rank X2	.	.	.	.	.	.	.
P(Rank X2)	.	.	.	.	.	.	.
Skewness	0,076	-0,6058	-0,5211	-0,0783	0,7148	2,1221*	-0,3246
Kurtosis	-0,9906	-0,7895	-0,9467	-1,1904	-0,4778	3,1507*	-1,3043
Replicate F	1,043	1,533	0,552	1,518	1,881	0,955	1,003
Replicate Prob(F)	0,3973	0,2287	0,6508	0,2299	0,1541	0,4267	0,4055
Treatment F	14,365	14,012	21,773	35,796	21,087	8,754	1,943
Treatment Prob(F)	0,0001	0,0001	0,0001	0,0001	0,0001	0,0001	0,0795

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
 Missing data estimates are included in columns: Average=1,7,9

Aarhus University, Department of Agroecology, Flakkebjerg

Crop Type, Code	C; SPQOL Spinach	C; SPQOL Spinach	C; SPQOL Spinach	C; SPQOL Spinach	C; SPQOL Spinach
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach
Description	Modenhed	Frøsætning			
Rating Date	22-07-2021	22-07-2021	02-08-2021	02-08-2021	16-02-2022
Part Rated	PLANT; C	PLANT; C	PLANT; C	PLANT; C	SEED; C
Rating Type	MATURI		YIELD	YIELD	GERMIN
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	g; -; -	KG; -; -	%; 0; 100
Sample Size	1 PLOT	1 PLOT	2 m2	1 ha	100 SEED
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Reporting Basis	1 PLOT	1 PLOT	1 PLOT		100 SEED
Days After First/Last Applic.	66; 43	66; 43	77; 54	77; 54	275; 252
Trt-Eval Interval	43 DA-D	43 DA-D	54 DA-D	54 DA-D	
ARM Action Codes				TY1 APOC	
Number of Decimals				1	1
Trt Treatment	Rate	Appl			
No. Name	Description	Rate	Unit	Code	
1Untreated Check	not treated				
		100a		100a	285ab
					1423,8ab (100,0%)
2Betanal	1L/ha A	99a		100a	276ab
Betanal	1L/ha B				1377,5ab (96,8%)
3Pixxaro EC	0,05L/ha A	90a		98a	216ab
Pixxaro EC	0,075L/ha C				1078,8ab (75,8%)
4Pixxaro EC	0,05L/ha B	98a		95ab	246ab
Pixxaro EC	0,075L/ha D				1231,3ab (86,5%)
5Pixxaro EC	0,125L/ha C	85a		95ab	216ab
					1078,8ab (75,8%)
6Pixxaro EC	0,2L/ha C	81a		85b	148b
					737,5b (51,8%)
7Proman	0,15L/ha B	98a		95ab	199ab
Proman	0,15L/ha C				992,5ab (69,7%)
8Proman	0,15L/ha B	69a		96a	258ab
Proman	0,3L/ha C				1287,5ab (90,4%)
9Proman	0,15L/ha B	90a		93ab	236ab
Proman	0,6L/ha C				1180,0ab (82,9%)
10Tromling	C	100a		95ab	280ab
					1398,8ab (98,2%)
11Tromling	D	94a		100a	319a
					1592,5a (111,9%)
LSD P=.05	18,5	6,8	85,7		428,28
Standard Deviation	12,8	4,7	59,3		296,57
CV	14,06	4,95	24,38		24,38
Grand Mean	91,1	95,6	243,3		1216,25
Levene's F	1,441	2,224	0,953		0,953
Levene's Prob(F)	0,206	0,042*	0,50		0,50
Rank X2	.	.	.		.
P(Rank X2)	.	.	.		.
Skewness	-4,0057*	-1,3033*	-0,0615		-0,0615
Kurtosis	20,6168*	0,9443	-0,629		-0,629
Replicate F	1,720	2,393	3,203		3,203
Replicate Prob(F)	0,1839	0,0889	0,0373		0,0373
Treatment F	2,294	3,233	2,581		2,581
Treatment Prob(F)	0,0385	0,0065	0,0218		0,0218

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
 Missing data estimates are included in columns: Average=1,7,9

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat stress forsøg med analyse for selfings.

Trial ID:21428	Location:AU Flakkebjerg	Trial Year:2021
Protocol ID:21428	Investigator (Creator):Andrius Hansen Kemezys	
Project ID:29894	Study Director:Peter Hartvig	
	Sponsor Contact:	

Crop Type, Code

C = EPP0 species (Bayer) codes

SPQOL, BVNH, Spinacia oleracea, Spinach = IE

Part Rated

PLANT = plant

C = Crop is Part Rated

P = Pest is Part Rated

Rating Type

PHYGEN = phytotoxicity - general / injury|%PROPORTION

MATURI = maturity

YIELD = yield

Rating Unit/Min/Max

%, 0, 100 = percent|PERCENT

g, , = gram|WEIGHT

KG, , = kilogram|WEIGHT

PLOT = total plot

m2 = square meter

ha = hectare

PLOT = total plot

PLOT = total plot

ARM Action Codes

APOC = Automatic percent control (Control forced to 100% on AOV Means Table)|RATIO

TY1 = 5.0*[10]

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat stress forsøg med analyse for selfings.

Crop Type, Code	C: SPQOL BVNH	C: SPQOL BVNH	C: SPQOL BVNH	C: SPQOL BVNH	C: SPQOL BVNH	C: SPQOL BVNH	C: SPQOL BVNH	C: SPQOL BVNH	C: SPQOL BVNH	C: SPQOL BVNH	C: SPQOL BVNH	C: SPQOL BVNH					
BBCH Scale	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach					
Crop Name																	
Description																	
Rating Date	31-05-2021	04-06-2021	11-06-2021	18-06-2021	28-06-2021	12-07-2021	12-07-2021	Modenhed 22-07-2021	Frøsetning 22-07-2021	Frøsetning 02-08-2021	Frøsetning 02-08-2021						
SE Name	X001	X001	X001	X001	X001	X001	X001										
Part Rated	PLANT; C	PLANT; C	PLANT; C	PLANT; C	PLANT; C	PLANT; C	PLANT; C	PLANT; P	PLANT; C	PLANT; C	PLANT; C	PLANT; C					
Rating Type	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN	PHYGEN		MATURI		YIELD	YIELD					
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	g; -; -	KG; -; -					
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	2 m2	1 ha					
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT					
Reporting Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT					
Days After First/Last Applic.	14; 3	18; 2	25; 2	32; 9	42; 19	56; 33	56; 33	66; 43	66; 43	77; 54	77; 54	77; 54					
Trt-Eval Interval	3 DA-B	2 DA-C	2 DA-D	9 DA-D	19 DA-D	33 DA-D	33 DA-D	43 DA-D	43 DA-D	54 DA-D	54 DA-D	54 DA-D					
ARM Action Codes												TY1 APOC					
Trt Treatment	Rate	Other	Other	Appl													
No. Name	Unit	Rate	Rate	Unit	Code	Plot	1	2	3	4	5	6	7	8	9	10	11
1 Untreated Check						104	0,0	0,0	0,0	0,0	0,0	0,0	100,0	100,0	100,0	266,0	1330,0
						205	0,0	0,0	0,0	0,0	0,0	0,0	70,0	100,0	100,0	244,0	1220,0
						302	0,0	0,0	0,0	0,0	0,0	0,0	100,0	100,0	100,0	306,0	1530,0
						403	0,0	0,0	0,0	0,0	0,0	0,0	75,0	100,0	100,0	323,0	1615,0
						Mean =	0,0	0,0	0,0	0,0	0,0	0,0	86,3	100,0	100,0	284,8	1423,8
2 Betanal 1L/ha				A		105	10,0	10,0	10,0	0,0	0,0	0,0	75,0	100,0	100,0	220,0	1100,0
				B		203	10,0	0,0	0,0	0,0	0,0	0,0	50,0	95,0	100,0	287,0	1435,0
						311	20,0	10,0	0,0	0,0	0,0	0,0	80,0	100,0	100,0	313,0	1565,0
						410	20,0	10,0	0,0	0,0	0,0	0,0	100,0	100,0	100,0	282,0	1410,0
						Mean =	15,0	7,5	2,5	0,0	0,0	0,0	76,3	98,8	100,0	275,5	1377,5
3 Pixxaro EC 0,05L/ha				A		110	20,0	10,0	0,0	0,0	0,0	0,0	50,0	90,0	100,0	338,0	1690,0
				C		208	25,0	35,0	30,0	20,0	10,0	0,0	30,0	90,0	95,0	147,0	735,0
						306	15,0	30,0	20,0	10,0	0,0	0,0	30,0	90,0	95,0	179,0	895,0
						402	20,0	30,0	20,0	10,0	0,0	0,0	35,0	90,0	100,0	199,0	995,0
						Mean =	20,0	26,3	17,5	10,0	2,5	0,0	36,3	90,0	97,5	215,8	1078,8
4 Pixxaro EC 0,05L/ha				B		101	25,0	15,0	30,0	20,0	10,0	0,0	100,0	100,0	100,0	236,0	1180,0
				D		206	30,0	20,0	35,0	25,0	15,0	15,0	75,0	100,0	90,0	124,0	620,0
						309	25,0	0,0	35,0	25,0	20,0	0,0	30,0	90,0	100,0	396,0	1980,0
						409	20,0	10,0	35,0	25,0	20,0	0,0	90,0	100,0	90,0	229,0	1145,0
						Mean =	25,0	11,3	33,8	23,8	16,3	3,8	73,8	97,5	95,0	246,3	1231,3
5 Pixxaro EC 0,125L/ha				C		108	0,0	30,0	25,0	20,0	10,0	0,0	35,0	70,0	90,0	276,0	1380,0
						211		25,0	15,0	15,0	5,0	0,0	85,0	90,0	95,0	165,0	825,0
						310		35,0	30,0	20,0	15,0	0,0	35,0	90,0	100,0	235,0	1175,0
						405		25,0	25,0	20,0	10,0	0,0	50,0	90,0	95,0	187,0	935,0
						Mean =	0,0	28,8	23,8	18,8	10,0	0,0	51,3	85,0	95,0	215,8	1078,8
6 Pixxaro EC 0,2L/ha				C		109	0,0	35,0	40,0	35,0	30,0	30,0	40,0	70,0	80,0	203,0	1015,0
						210		30,0	25,0	30,0	20,0	20,0	85,0	85,0	90,0	105,0	525,0
						307		35,0	35,0	30,0	25,0	25,0	30,0	80,0	90,0	153,0	765,0
						407		35,0	35,0	35,0	30,0	25,0	75,0	90,0	80,0	129,0	645,0
						Mean =	0,0	33,8	33,8	32,5	26,3	25,0	57,5	81,3	85,0	147,5	737,5
7 Proman 0,15L/ha				B		106	10,0	20,0	20,0	15,0	5,0	0,0	75,0	100,0	90,0	227,0	1135,0
				C		202	15,0	25,0	25,0	15,0	5,0	0,0	50,0	90,0	100,0	108,0	540,0
						304	10,0	30,0	25,0	20,0	10,0	0,0	80,0	100,0	100,0	240,0	1200,0
						406	10,0	25,0	25,0	20,0	10,0	10,0	90,0	100,0	90,0	219,0	1095,0
						Mean =	11,3	25,0	23,8	17,5	7,5	2,5	73,8	97,5	95,0	198,5	992,5
8 Proman 0,15L/ha				B		107	5,0	20,0	30,0	20,0	10,0	0,0	50,0	80,0	90,0	286,0	1430,0
				C		209	15,0	25,0	35,0	30,0	20,0	0,0	85,0	10,0	95,0	213,0	1065,0
						305	10,0	30,0	35,0	25,0	15,0	0,0	80,0	95,0	100,0	253,0	1265,0
						404	10,0	25,0	30,0	25,0	15,0	0,0	50,0	90,0	100,0	278,0	1390,0
						Mean =	10,0	25,0	32,5	25,0	15,0	0,0	66,3	68,8	96,3	257,5	1287,5
9 Proman 0,15L/ha				B		103	10,0	20,0	35,0	25,0	15,0	15,0	100,0	100,0	80,0	153,0	765,0
				C		201	15,0	25,0	35,0	25,0	15,0	0,0	20,0	80,0	100,0	328,0	1640,0
						308	5,0	30,0	35,0	30,0	20,0	0,0	30,0	90,0	100,0	307,0	1535,0
						408	25,0	35,0	40,0	35,0	30,0	30,0	80,0	90,0	156,0	780,0	
						Mean =	13,8	27,5	36,3	28,8	20,0	11,3	57,5	90,0	93,3	236,0	1180,0
10 Tromling				C		102		15,0	10,0	0,0	0,0	0,0	100,0	100,0	100,0	267,0	1335,0
						207		20,0	15,0	10,0	0,0	0,0	80,0	100,0	90,0	210,0	1050,0
						301		25,0	15,0	5,0	0,0	0,0	100,0	100,0	100,0	385,0	1925,0
						401		25,0	10,0	0,0	0,0	0,0	80,0	100,0	90,0	257,0	1285,0
						Mean =		21,3	12,5	3,8	0,0	0,0	90,0	100,0	95,0	279,8	1398,8
11 Tromling				D		111		20,0	15,0	5,0	0,0	0,0	90,0	100,0	100,0	290,0	1450,0
						204		20,0	10,0	0,0	0,0	0,0	50,0	85,0	100,0	319,0	1595,0
						303		20,0	10,0	0,0	0,0	0,0	90,0	100,0	100,0	329,0	1645,0
						411		25,0	15,0	10,0	0,0	0,0	100,0	100,0	100,0	336,0	1680,0
						Mean =		21,3	12,5	3,8	0,0	0,0	80,0	93,8	100,0	318,5	1592,5

Aarhus University, Department of Agroecology, Flakkebjerg

Spinat stress forsøg med analyse for selfings.

Trt	Treatment	Rate	Appl	Plot	12
1	Untreated Check	not treated		104	95,0
				205	87,0
				302	93,0
				403	90,0
				Mean =	91,3
2	Betanal	1L/ha	A	105	94,0
	Betanal	1L/ha	B	203	88,0
				311	90,0
				410	90,0
				Mean =	90,5
3	Pixxaro EC	0,05L/ha	A	110	90,0
	Pixxaro EC	0,075L/ha	C	208	58,0
				306	66,0
				402	61,0
				Mean =	68,8
4	Pixxaro EC	0,05L/ha	B	101	84,0
	Pixxaro EC	0,075L/ha	D	206	74,0
				309	62,0
				409	80,0
				Mean =	75,0
5	Pixxaro EC	0,125L/ha	C	108	76,0
				211	47,0
				310	40,0
				405	48,0
				Mean =	52,8
6	Pixxaro EC	0,2L/ha	C	109	50,0
				210	33,0
				307	53,0
				407	63,0
				Mean =	49,8
7	Proman	0,15L/ha	B	106	88,0
	Proman	0,15L/ha	C	202	90,0
				304	96,0
				406	92,0
				Mean =	91,5
8	Proman	0,15L/ha	B	107	94,0
	Proman	0,3L/ha	C	209	91,0
				305	93,0
				404	96,0
				Mean =	93,5
9	Proman	0,15L/ha	B	103	92,0
	Proman	0,6L/ha	C	201	85,0
				308	100,0
				408	89,0
				Mean =	91,5
10	Tromling		C	102	90,0
				207	93,0
				301	94,0
				401	84,0
				Mean =	90,3
11	Tromling		D	111	93,0
				204	88,0
				303	93,0
				411	90,0
				Mean =	91,0

Crop Type, Code
C = EPPQ species (Bayer) codes
SPQOL, BVNH, Spinacia oleracea, Spinach = IE

Part Rated
PLANT = plant
C = Crop is Part Rated
P = Pest is Part Rated

Rating Type
PHYGEN = phytotoxicity - general / injury%PROPORTION
MATURI = maturity
YIELD = yield

Rating Unit/Min/Max
%, 0, 100 = percent|PERCENT
g, , = gram|WEIGHT
KG, , = kilogram|WEIGHT

PLOT = total plot
m2 = square meter
ha = hectare

PLOT = total plot
ARM Action Codes
APOC = Automatic percent control (Control forced to 100% on AOV Means Table)|RATIO
TY1 = 5.0*[10]

Aarhus University, Department of Agroecology, Flakkebjerg

Nedvisning i spinat 2021.

Trial ID:21426 Location:Lystager Torp Trial Year:2021
 Protocol ID:21426 Investigator:Andrius Hansen Kemezys
 Project ID:33254 Study Director:Peter Hartvig

General Trial Information

Study Director:Peter Hartvig **Title:**Study director
Investigator:Andrius Hansen Kemezys **Title:**Academic employeee

Discipline:H herbicide

Trial Status:F one-year/final

ARM Trial Created On:19-04-2021

Initiation Date:23-07-2021

Planned Completion Date:01-12-2021

Trial Location

City:Lystager Torp **Country:**DNK Denmark
State/Prov.:Fuglebjerg
Postal Code:4250 **Climate Zone:**EPOMAR EPPO Maritime

Latitude of LL Corner °:55,309031 N

Longitude of LL Corner °:11,490654 E

Conducted Under GLP:No

Conducted Under GEP:Yes

Conclusions:

Forsøget blev udført i Lystager Torp ved Fuglebjerg på sydvest Sjælland. Forsøget har til formål at teste effekt af alternative produkter til Reglone + Agropol til nedvisning af spinat før høst. De testede produkter er TopGun Finalsan Koncentrat og Mizuki. Desuden er tilsætning af henholdsvis flydende NS 30-2 og TopGun Finalsan Koncentrat til Mizuki testet.

Sprøjtningerne blev udført på to tidspunkter, A; 10 dage før forventet høst 23. juli og B; 3-4 dage før forventet høst 27. juli. Spinaten blev bedømt for nedvisning 5 gange efter behandling A og 4 gange efter behandling B, henholdsvis 1, 3, 5, 6, 7, 10 og 12 dage efter behandlingerne. Efter den sidste bedømmelse blev der udtaget spinat frøprøver til spirings analyse, som blev udført i februar-marts 2022.

Høstperioden i 2021 var noget ustabil, men primo august var vejret tørt og med sol. 3 dage efter behandling A var den naturlige nedvisning i ubehandlet 40%, og 3 dage efter behandling B var den naturlige nedvisning i ubehandlet 67%, ved den sidste bedømmelse primo august var nedvisningen i ubehandlet 85%. Reference produktet Reglone + Agropol blev anvendt i 2 doseringer; 0,5 L Reglone + 0,15 L Agropol og 2,0 L Reglone + 0,15 L Agropol. Ved bedømmelserne for nedvisning 3 og 6 dage efter behandlingen med 0,5 L Reglone + 0,15 L Agropol var nedvisningen på samme niveau som ubehandlet, der var ingen signifikant forskel. Ved bedømmelsen primo august var nedvisningen signifikant lidt højere end ubehandlet. Det samme gør sig gældende for 2,0 L Reglone + 0,15 L Agropol, nedvisningen er dog lidt højere. Ved den sidste bedømmelsen primo august er nedvisningen 100%.

Leddene med TopGun Finalsan Koncentrat blev behandlet med henholdsvis 80 L og 120 L, 3-4 dage før forventet høst. Effekten af nedvisning med 80 L er ved bedømmelserne 3 og 6 dage efter behandlingen på samme niveau som i ubehandlet, der er ikke signifikant forskel. Ved den sidste bedømmelsen er nedvisningen signifikant lidt højere end i ubehandlet. Effekten af nedvisning med 120 L er ved alle bedømmelser signifikant højere end i ubehandlet, der er dog ikke signifikant forskel mellem de 2 doseringer af TopGun Finalsan Koncentrat. Leddene med Mizuki er behandlet 10 dage før høst, der er anvendt 3 doseringer, 1,0 L, 2,0 L og 4,0 L. Ved bedømmelserne 3, 5 og 7 dage efter behandlingen er der ingen signifikant forskel på nedvisningen hverken mellem doseringerne, eller i forhold til ubehandlet. Ved bedømmelsen 10 dage efter behandlingen er nedvisningen i alle led større end i ubehandlet, og 4,0 L Mizuki er signifikant mere nedvisnet end ubehandlet, der er dog ikke signifikant forskel mellem doseringerne. Ved den sidste bedømmelse 12 dage efter behandlingen, er nedvisningen i alle led 97 – 100%, hvilket er signifikant mere end i ubehandlet.

Tilsætning af henholdsvis TopGun Finalsan Koncentrat og NS 30-2 til Mizuki (1,0 l/ha) har 3 dage efter behandling hævet effekten i forhold til Mizuki alene, men det er kun tilsætningen af TopGun, der er signifikant. Ved bedømmelse 6 dage efter behandling er der stadig forskel, men dog ingen signifikant. Ved de efterfølgende bedømmelser udlignes forskellene.

Behandling A og B er udført henholdsvis 10 og 3-4 dage før forventet høst. I forhold til de udførte datoer vil forventet høst være omkring 1. – 2. august. På dette tidspunkt er der ingen signifikante forskelle indbyrdes mellem de afprøvede midler eller i forhold til referencebehandlingen med Reglone, og kun de højeste doseringer af TopGun og Mizuki samt Mizuki med tilsætning af NS 30-2 er signifikant forskellige fra ubehandlet.

Spiringsanalyse for spirehastighed og spireevne har ikke vist noget signifikant forskel mellem ubehandlet og de testede led. Spiringsniveauet var dog på meget lavt niveau (60-75%).

Contacts

Study Director:Peter Hartvig **Title:**Study director
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Investigator:Andrius Hansen Kemezys **Title:**Academic employee
Organization:Aarhus University, Department of Agroecology
Address:Forsøgsvej 1, Flakkebjerg
City+State/Prov:Slagelse **Mobile No.:**+4526796484
Postal Code:4200 **E-mail:**ahk@agro.au.dk

Crop Description

Crop 1:SPQOL Spinacia oleracea Spinach
Stage Scale:BBCH **BBCH Scale:**BVNH

Site and Design

Treated Plot Width:2,5 m **Site Type:**FIELD field
Treated Plot Length:7 m **Experimental Unit:**1 PLOT plot
Treated Plot Area:17,5 m² **Treatments:**10 **Tillage Type:**CONTIL conventional-till
Replications:4 **Study Design:**RACOB� Randomized Complete Block (RCB)

Soil Description

% Sand:67 **% OM:**5,1 **Texture:**SL sandy loam
% Silt:13,5 **pH:**5,5
% Clay:14,4

Moisture and Weather Conditions

Overall Moisture Conditions:NORMAL normal
Closest Weather Station:AU Flakkebjerg **Distance, Unit:**6,5 km

Application Description

	A	B
Application Date:	23-07-2021	27-07-2021
Appl. Start Time:	10:30	12:00
Appl. Stop Time:	11:00	12:30
Application Method:	SPRAY	SPRAY
Application Placement:	FOLIAR	FOLIAR
Applied By:	PEA	PEA
Appl. Entry Date:	04-08-2021	04-08-2021
Air Temperature Start, Stop:	-; 18,6 C	-; 24,7 C
% Relative Humidity Start, Stop:	-; 68	-; 55
Wind Velocity+Dir., Start:	1 MPS; NW	1 MPS; NW
Wet Leaves (Y/N):	N; no	N; no
Soil Temperature, Unit:	19 C	20 C
Soil Moisture:	DRY	WET
Soil Surface Condition:	COARSE	COARSE
% Cloud Cover:	50	10

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	SPQOL; BVNH	SPQOL; BVNH
Stage Majority, Percent:	79; -	81; -

Application Equipment

	A	B
Appl. Equipment:	Selvkørende	bicyc.spraye
Equipment Type:	SPRAYE	SPRBIC
Operation Pressure:	3.8 BAR	38 BAR
Nozzle Type:	Hardi	Hardi
Nozzle Size:	LD015-110	LD015-110
Nozzle Spacing:	50 cm	50 cm
Nozzles/Row:	5	5
Boom Length:	2.5 m	25 m
Boom Height:	50 cm	50 cm
Ground Speed:	2.4 KPH	24 KPH
Carrier:	WATER	WATER
Spray Volume:	300 L/ha	

Date	By	Context	Notes
19-04-2021	Andrius Hansen Kemezys	STATUS	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
04-08-2021	Andrius Hansen Kemezys	STATUS	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

SE Definitions				
	1.	2.	3.	4.
Rating Timing	A1-A4	H1	H1	OE
SE Name	ZUSX041	Y207_C2	Y086	ZUSX017
SE Description	% Dessication (100%=Defol+Desicc+Green Lf)	Seed yield per ha (gross yield). Formula: $([Y207A]/\text{plot size in m}^2) * 10000$	% moisture content of grain	Seed - Germination
Part Rated	PLANT; C	SEED; C	GRAIN; C	SEED; C
Rating Type	DESICC	YIEGRO	CONMOI	GERMIN
Rating Unit	% AREA	KG/HA	%	%
Sample Size	1 PLOT	1 PLOT	1 PLOT	100 SEED
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Reporting Basis	1 PLOT	1 HA	1 PLOT	100 SEED
Calculation	NC	IN	IN	IN
Number of Sub-samples	1	1		1
ARM Action Codes		@YLDKGGK[1]		

Registreringer:

Timing	Nr.	Registreringer (ARM code)
2-3 dage efter B	1, 2	BBCH, DESICC
4-5 dage efter B	1, 2	BBCH, DESICC
7 dage efter B (lige inden høst)	1, 2	BBCH, DESICC
Ved høst	3, 4	CONMOI, YIEGRO
Efter høst	5	GERMIN

Nr	ARM code	SE name	Beskrivelse
1	BBCH		BBCH for afgrøde.
2	DESICC	ZUSX041	Nedvisning på spinat, %. Hvis relevant, udføres separat på stængler, blade og frø.
3	CONMOI	Y086	Vandprocent af frø, %.
4	YIEGRO	Y207_C2	Frøudbytte, kg/ha.
5	GERMIN	ZUSX017	Spirehastighed og spireevne, %.

Cropping Considerations:

Forsøg udføres i spanat mark uden ukrudt. Brug evt. herbicidprogram eller mekanisk renholdelse for at bekæmpe ukrudt.

Aarhus University, Department of Agroecology, Flakkebjerg

Nedvisning i spinat 2021.

Trial ID:21426 Location:Lystager Torp Trial Year:2021
 Protocol ID:21426 Investigator:Andrius Hansen Kemezys
 Project ID:33254 Study Director:Peter Hartvig
 Sponsor Contact:

Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	Appl Description	Spray Volume	Volume Unit
1	HERB	Untreated											
2	HERB ADJ	Reglone Agropol	200 1000	gA/L gA/L	SL XL	0,5 0,15	L/ha L/ha	100 150	g AI/ha g AI/ha	B B	3-4 dage før høst 3-4 dage før høst	300 300	L/ha L/ha
3	HERB ADJ	Reglone Agropol	200 1000	gA/L gA/L	SL XL	2 0,15	L/ha L/ha	400 150	g AI/ha g AI/ha	B B	3-4 dage før høst 3-4 dage før høst	300 300	L/ha L/ha
4	HERB	TopGun Finalsan Koncentrat	187	gA/L	FL	80	L/ha	14960	g AI/ha	B	3-4 dage før høst	300	L/ha
5	HERB	TopGun Finalsan Koncentrat	187	gA/L	FL	120	L/ha	22400	g AI/ha	B	3-4 dage før høst	300	L/ha
6	HERB	Mizuki	10,6	gA/L	EC	1	L/ha	10,6	g AI/ha	A	10 dage før høst	300	L/ha
7	HERB	Mizuki	10,6	gA/L	EC	2	L/ha	21,2	g AI/ha	A	10 dage før høst	300	L/ha
8	HERB	Mizuki	10,6	gA/L	EC	4	L/ha	42,4	g AI/ha	A	10 dage før høst	300	L/ha
9	HERB FERT	Mizuki Flydende N 30-2	10,6 392	gA/L gA/L	EC F	1 76	L/ha L/ha	10,6 29800	g AI/ha g AI/ha	A A	10 dage før høst 10 dage før høst	300 300	L/ha L/ha
10	HERB HERB	Mizuki TopGun Finalsan Koncentrat	10,6 187	gA/L gA/L	EC FL	1 80	L/ha L/ha	10,6 14960	g AI/ha g AI/ha	A A	10 dage før høst 10 dage før høst	300 300	L/ha L/ha

Additional Treatment Information

Type
 HERB = Herbicide
 ADJ = Adjuvant
 FERT = Fertilizer

Treatment Name
 Untreated, , , = |
 Reglone, 200, gA/L, SL = diquat|200|
 Agropol, 1000, gA/L, XL = oil|1000|
 Mizuki, 10,6, gA/L, EC = pyraflufen-ethyl|10,6|
 Flydende N 30-2, 392, gA/L, F = nitrogen|392|

Form Unit
 gA/L = grams active ingredient per litre formulated product

Form Type
 SL = soluble concentrate|Liquid||A clear to opalescent liquid to be applied as a solution of the active ingredient after dilution in water. The liquid may contain water insoluble formulants.
 XL = other, liquid ingredient|Liquid||Other liquid ingredient
 FL = flowable|Liquid||
 EC = emulsifiable concentrate|Liquid||A liquid, homogeneous formulation to be applied as an emulsion after dilution in water.
 F = flowable|Liquid||

Rate Unit
 L/ha = Liters Product per Hectare (US=GAL/A)|T

Volume Unit
 L/ha = litres per hectare

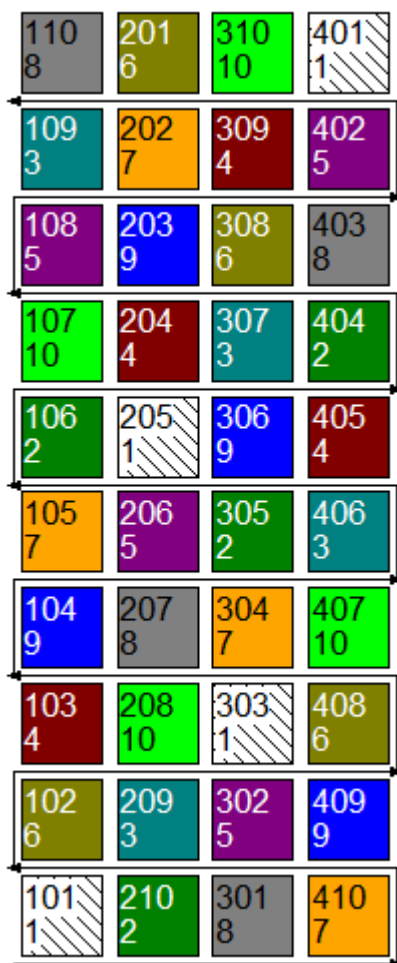
Aarhus University, Department of Agroecology, Flakkebjerg

Nedvisning i spinat 2021.

Trial ID:21426	Location:Lystager Torp	Trial Year:2021
Protocol ID:21426	Investigator:Andrius Hansen Kemezys	
Project ID:33254	Study Director:Peter Hartvig	
Sponsor Contact:		

Trial Map Treatment Description

Trt	Code	Description
1	CHK	Untreated
2		Reglone 0.5 L/ha;Agropol 0.15 L/ha
3		Reglone 2 L/ha;Agropol 0.15 L/ha
4		TopGun Finalsan Koncentrat 80 L/ha
5		TopGun Finalsan Koncentrat 120 L/ha
6		Mizuki 1 L/ha
7		Mizuki 2 L/ha
8		Mizuki 4 L/ha
9		Mizuki 1 L/ha;Flydende N 30-2 76 L/ha
10		Mizuki 1 L/ha;TopGun Finalsan Koncentrat 80 L/ha



Aarhus University, Department of Agroecology, Flakkebjerg

Nedvisning i spinat 2021.

Trial ID:21426	Location:Lystager Torp	Trial Year:2021
Protocol ID:21426	Investigator:Andrius Hansen Kemezys	
Project ID:33254	Study Director:Peter Hartvig	
Sponsor Contact:		

Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach	
Rating Date	26-07-2021	28-07-2021	30-07-2021	02-08-2021	04-08-2021	14-03-2022	
Part Rated	PLANT; C	PLANT; C	PLANT; C	PLANT; C	PLANT; C	SEED; C	
Rating Type	DESICC	DESICC	DESICC	DESICC	DESICC	GERMIN	
Rating Unit/Min/Max	% AREA; -; -	% AREA; -; -	% AREA; -; -	% AREA; -; -	% AREA; -; -	%; 0; 100	
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	100 SEED	
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	
Reporting Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	100 SEED	
Number of Subsamples	1	1	1	1	1	1	
Assessed By	PHA	PHA	PHA	PHA	PHA	PHA	
Days After First/Last Applic.	3; 3	5; 1	7; 3	10; 6	12; 8	234; 230	
Trt-Eval Interval	3 DA-A	1 DA-B	3 DA-B	6 DA-B	8 DA-B		
Number of Decimals	1	1	1	1	1	1	
Trt Treatment	Rate Appl	1	2	3	4	5	6
No. Name	Description Rate Unit Code						
1Untreated	Ubehandlet	40,0bc	55,0bc	67,5bc	75,0b	85,0b	61,3a
2Reglone	0,5L/ha B	32,5c	52,5c	65,0c	77,5ab	92,5a	69,8a
Agropol	0,15L/ha B						
3Reglone	2L/ha B	40,0bc	62,5abc	83,8abc	90,0ab	100,0a	60,8a
Agropol	0,15L/ha B						
4TopGun Finalsans Koncentrat	80L/ha B	36,3c	57,5bc	76,3abc	83,8ab	93,0a	67,8a
5TopGun Finalsans Koncentrat	120L/ha B	37,5bc	78,8ab	88,8a	91,3a	96,3a	65,8a
6Mizuki	1L/ha A	45,0bc	62,5abc	78,8abc	90,0ab	100,0a	64,3a
7Mizuki	2L/ha A	50,0abc	70,0abc	76,7abc	86,7ab	96,7a	46,8a
8Mizuki	4L/ha A	50,0abc	71,3abc	83,8abc	92,5a	98,8a	74,8a
9Mizuki	1L/ha A	63,3ab	76,7abc	85,0abc	91,7a	96,7a	62,8a
Flydende N 30-2	76L/ha A						
10Mizuki	1L/ha A	70,0a	85,0a	86,3ab	90,0ab	96,3a	70,5a
TopGun Finalsans Koncentrat	80L/ha A						
LSD P=.05		16,69	15,09	12,61	9,77	5,74	15,54
Standard Deviation		11,46	10,37	8,66	6,71	3,94	10,71
CV		24,67	15,43	10,94	7,73	4,13	16,63
Grand Mean		46,46	67,17	79,17	86,83	95,51	64,43
Levene's F		0,282	0,374	1,007	1,654	1,267	0,342
Levene's Prob(F)		0,974	0,938	0,458	0,148	0,297	0,953
Rank X2		.	.	.	.	.	.
P(Rank X2)		.	.	.	.	.	.
Skewness		0,2029	0,1145	-0,7929*	-0,6168	-0,9857*	-0,5973
Kurtosis		-0,343	-1,0461	0,1666	-0,1188	-0,0159	0,2336
Replicate F		7,357	2,694	0,800	0,703	2,016	21,944
Replicate Prob(F)		0,0011	0,0676	0,5054	0,5591	0,1374	0,0001
Treatment F		4,495	4,415	3,378	3,373	5,159	2,028
Treatment Prob(F)		0,0014	0,0015	0,0077	0,0077	0,0005	0,0753

Crop Code	SPQOL, BVNH, Spinacia oleracea, Spinach = US
SE Name	ZUSX041 = A1-A4
Part Rated	PLANT = plant C = Crop is Part Rated
Rating Type	DESICC = desiccation
Rating Unit	% AREA = percent of area
PLOT	= total plot

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
 Missing data estimates are included in columns: Average=1,2,3,4,5

Aarhus University, Department of Agroecology, Flakkebjerg

Nedvisning i spinat 2021.

Trial ID:21426
 Protocol ID:21426
 Project ID:33254

Location:Lystager Torp
 Investigator:Andrius Hansen Kemezys
 Study Director:Peter Hartvig
 Sponsor Contact:

Trial Year:2021

Crop Type, Code	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL	C; SPQOL
Crop Name	Spinach	Spinach	Spinach	Spinach	Spinach	Spinach
Rating Date	26-07-2021	28-07-2021	30-07-2021	02-08-2021	04-08-2021	14-03-2022
Part Rated	PLANT; C	PLANT; C	PLANT; C	PLANT; C	PLANT; C	SEED; C
Rating Type	DESICC	DESICC	DESICC	DESICC	DESICC	GERMIN
Rating Unit/Min/Max	%AREA; -; -	%AREA; -; -	%AREA; -; -	%AREA; -; -	%AREA; -; -	%; 0; 100
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	100 SEED
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Reporting Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	100 SEED
Number of Subsamples	1	1	1	1	1	1
Assessed By	PHA	PHA	PHA	PHA	PHA	234; 230
Days After First/Last Applic.	3; 3	5; 1	7; 3	10; 6	12; 8	
Trt-Eval Interval	3 DA-A	1 DA-B	3 DA-B	6 DA-B	8 DA-B	
Number of Decimals	1	1	1	1	1	1
Trt Treatment	Rate Appl					
No. Name	Description	Rate	Unit	Code	Plot	
1	Untreated					
	Ubehandlet					
		50,0			70,0	80,0
		40,0			50,0	65,0
		30,0			45,0	60,0
		40,0			55,0	65,0
	Mean =	40,0			55,0	67,5
		20,0			40,0	50,0
2	Reglone	0,5L/ha	B			
	Agropol	0,15L/ha	B			
		45,0			60,0	75,0
		30,0			50,0	60,0
		35,0			60,0	75,0
	Mean =	32,5			52,5	65,0
		20,0			40,0	50,0
3	Reglone	2L/ha	B			
	Agropol	0,15L/ha	B			
		50,0			70,0	80,0
		30,0			60,0	70,0
		60,0			70,0	80,0
	Mean =	40,0			62,5	83,8
		20,0			50,0	70,0
4	TopGun Finals	80L/ha	B			
	Koncentrat					
		50,0			70,0	80,0
		30,0			50,0	70,0
		45,0			70,0	90,0
		50,0			60,0	75,0
	Mean =	36,3			57,5	76,3
		10,0			60,0	85,0
5	TopGun Finals	120L/ha	B			
	Koncentrat					
		50,0			70,0	80,0
		40,0			90,0	90,0
		50,0			75,0	85,0
	Mean =	37,5			78,8	88,8
		10,0			60,0	85,0
6	Mizuki	1L/ha	A			
		40,0			60,0	80,0
		40,0			65,0	75,0
		30,0			50,0	70,0
		70,0			75,0	90,0
	Mean =	45,0			62,5	78,8
		20,0			50,0	70,0
7	Mizuki	2L/ha	A			
		60,0			75,0	80,0
		30,0			50,0	60,0
		60,0			85,0	90,0
	Mean =	50,0			70,0	76,7
		20,0			50,0	60,0
8	Mizuki	4L/ha	A			
		35,0			60,0	80,0
		60,0			80,0	85,0
		45,0			70,0	85,0
		60,0			75,0	85,0
	Mean =	50,0			71,3	83,8
		20,0			50,0	70,0
9	Mizuki	1L/ha	A			
	Flydende N 30-2	76L/ha	A			
		60,0			80,0	85,0
		50,0			60,0	75,0
		80,0			90,0	95,0
	Mean =	63,3			76,7	85,0
		20,0			50,0	70,0
10	Mizuki	1L/ha	A			
	TopGun Finals	80L/ha	A			
	Koncentrat					
		50,0			80,0	80,0
		80,0			90,0	90,0
		80,0			90,0	90,0
		70,0			80,0	85,0
	Mean =	70,0			85,0	86,3
		20,0			50,0	70,0

Crop Code
 SPQOL, BVNH, Spinacia oleracea, Spinach = US
 SE Name
 ZUSX041 = A1-A4
 Part Rated
 PLANT = plant
 C = Crop is Part Rated
 Rating Type
 DESICC = desiccation
 Rating Unit
 %AREA = percent of area
 PLOT = total plot

Aarhus University, Department of Agroecology, Flakkebjerg

Nedvisning af spinat - alternative midler

Trial ID:21429 Location:Lystager Torp Trial Year:2021
 Protocol ID:21429 Investigator:Andrius Hansen Kemezys
 Project ID:33254 Study Director:
 Sponsor Contact:

General Trial Information

Study Director:Peter Hartvig **Title:**Study director
Investigator:Andrius Hansen Kemezys **Title:**Academic employee

Discipline:H herbicide
Trial Status:F final (completed)
ARM Trial Created On:05-08-2021
Initiation Date:27-07-2021

Trial Location

City:Lystager Torp **Country:**DNK Denmark
State/Prov.:Fuglebjerg
Postal Code:4250 **Climate Zone:**EPOMAR EPO Maritime

Latitude of LL Corner °:55,309031 N
Longitude of LL Corner °:11,490654 E

Conducted Under GLP:No
Conducted Under GEP:Yes

Conclusions:

Forsøget blev udført i Lystager Torp ved Fuglebjerg på sydvest Sjælland. Forsøget har til formål at teste effekt af alternative produkter til Reglone + Agropol til nedvisning af spinat før høst. De testede produkter er Mizuki med og uden tilsætning af henholdsvis flydende NS 30-2, TopGun Finalsan Koncentrat samt AdBlue. Desuden er eddikesyre og alm. køkkensalt (NaCl) afprøvet.

Sprøjtningen blev udført den 27. juli 3-4 dage før forventet høst af spinat. Spinat blev bedømt for nedvisning 4 gange efter behandlingen, henholdsvis 1, 3, 6, og 8 dage efter behandlingerne.

Ved bedømmelserne 1, 3 og 8 dage efter behandling blev der ikke fundet signifikante forskelle, hverken mellem midler eller i forhold til ubehandlet. Eneste signifikante resultater blev fundet ved bedømmelsen 6 dage efter behandling, hvor at referencebehandlingen med Reglone + Agropol i normaldosering (2,0 l/ha) var signifikant forskellige fra ubehandlet samt i behandling med Reglone + Agropol (0,5 l/ha) tilsat NS 30-2 (76 l/ha).

Contacts

Study Director:Peter Hartvig **Title:**Study director
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Postal Code:4200 **E-mail:**peter.hartvig@agro.au.dk

Investigator:Andrius Hansen Kemezys **Title:**Academic employee
Organization:Aarhus University, Department of Agroecology
Address:Forsøgsvej 1, Flakkebjerg
City+State/Prov:Slagelse **Mobile No.:**+4526796484
Postal Code:4200 **E-mail:**ahk@agro.au.dk

Crop Description

Crop 1:SPQOL Spinacia oleracea Spinach
Entry Date:12-01-2022

Site and Design

Treated Plot Width:2,5 m **Site Type:**FIELD field
Treated Plot Length:7 m **Experimental Unit:**1 PLOT plot
Treated Plot Area:17,5 m² **Treatments:**10 **Tillage Type:**CONTIL conventional-till
Replications:4 **Study Design:**RACOB� Randomized Complete Block (RCB)

Soil Description

% Sand:67 **% OM:**5,1 **Texture:**SL sandy loam
% Silt:13,5 **pH:**5,5
% Clay:14,4

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal

Closest Weather Station: AU Flakkebjerg Distance, Unit: 6,5 km

Application Description

	A
Application Date:	27-07-2021
Appl. Start Time:	13:00
Appl. Stop Time:	13:30
Application Method:	SPRAY
Application Placement:	FOLIAR
Applied By:	PEA
Appl. Entry Date:	05-08-2021
Air Temperature Start, Stop:	-; 24,9 C
% Relative Humidity Start, Stop:	-; 55
Wind Velocity+Dir., Start:	3,7 MPS; SW
Wet Leaves (Y/N):	N; no
Soil Temperature, Unit:	20 C
Soil Moisture:	WET
Soil Surface Condition:	COARSE
% Cloud Cover:	10

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	SPQOL; BVNH
Stage Majority, Percent:	81; -

Application Equipment

	A
Appl. Equipment:	Selvkørende
Equipment Type:	SPRAYE
Operation Pressure:	3.8 BAR
Nozzle Type:	Hardi
Nozzle Size:	LD015-110
Nozzle Spacing:	50 cm
Nozzles/Row:	5
Boom Length:	2.5 m
Boom Height:	50 cm
Ground Speed:	2.4 KPH
Carrier:	WATER
Spray Volume:	300 L/ha

Date	By	Context	Notes
05-08-2021	Andrius Hansen Kemezys	STATUS	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
05-08-2021	Andrius Hansen Kemezys	STATUS	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

Aarhus University, Department of Agroecology, Flakkebjerg

Nedvisning af spinat - alternative midler

Trial ID:21429 Location:Lystager Torp Trial Year:2021
 Protocol ID:21429 Investigator:Andrius Hansen Kemezys
 Project ID:33254 Study Director:
 Sponsor Contact:

Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Appl Code	Spray Volume	Volume Unit
1	CHK	Untreated Check								
2	HERB	Reglone	200	gA/L	SL	0,5	L/ha	A	300	L/ha
	ADJ	Agropol	1000	gA/L	XL	0,15	L/ha	A	300	L/ha
3	HERB	Reglone	200	gA/L	SL	2	L/ha	A	300	L/ha
	ADJ	Agropol	1000	gA/L	XL	0,15	L/ha	A	300	L/ha
4	HERB	Reglone	200	gA/L	SL	0,5	L/ha	A	300	L/ha
	FERT	Flydende N 30-2	392	gA/L	F	76	L/ha	A	300	L/ha
5	HERB	Mizuki	10,6	gA/L	EC	1	L/ha	A	300	L/ha
6	HERB	Mizuki	10,6	gA/L	EC	1	L/ha	A	300	L/ha
	FERT	Flydende N 30-2	392	gA/L	F	76	L/ha	A	300	L/ha
7	HERB	Mizuki	10,6	gA/L	EC	1	L/ha	A	300	L/ha
	HERB	TopGun Finalsan Koncentrat	186,7	gA/L	F	80	L/ha	A	300	L/ha
8	HERB	Mizuki	10,6	gA/L	EC	1	L/ha	A	300	L/ha
	ADJ	AdBlue	325	gA/L	F	200	L/ha	A	300	L/ha
9	HERB	Eddikkesyre			F	900	L/ha	A	900	L/ha
10	HERB	NaCl køkkensalt			WG	100	kg/ha	A	300	L/ha

Additional Treatment Information

Type

CHK = Check or Untreated

HERB = Herbicide

ADJ = Adjuvant

FERT = Fertilizer

Treatment Name

Untreated Check, , , = Not treated|

Reglone, 200, gA/L, SL = diquat|200|

Agropol, 1000, gA/L, XL = oil|1000|

Flydende N 30-2, 392, gA/L, F = nitrogren|392|

Mizuki, 10.6, gA/L, EC = pyraflufen-ethyl|10,6|

TopGun Finalsan Koncentrat, 186.7, gA/L, F = Pelargonsyre|186,7|

AdBlue, 325, gA/L, F = Urea|325|

Form Unit

gA/L = grams active ingredient per litre formulated product

Form Type

SL = soluble concentrate|Liquid||A clear to opalescent liquid to be applied as a solution of the active ingredient after dilution in water. The liquid may contain water insoluble formulants.

XL = other, liquid ingredient|Liquid||Other liquid ingredient

F = flowable|Liquid||

EC = emulsifiable concentrate|Liquid||A liquid, homogeneous formulation to be applied as an emulsion after dilution in water.

WG = water dispersible granules|Dry||A formulation consisting of granules to be applied after disintegration and dispersion in water.

Rate Unit

L/ha = Liters Product per Hectare (US=GAL/A)|T

kg/ha = Kilograms Dry Product per Hectare (US=kg/A)|

Volume Unit

L/ha = litres per hectare

Aarhus University, Department of Agroecology, Flakkebjerg

Nedvisning af spinat - alternative midler

Trial ID:21429	Location:Lystager Torp	Trial Year:2021
Protocol ID:21429	Investigator:Andrius Hansen Kemezys	
Project ID:33254	Study Director:	
	Sponsor Contact:	

Trial Map Treatment Description

Trt	Code	Description
1	CHK	Untreated Check
2		Reglone 0.5 L/ha;Agropol 0.15 L/ha
3		Reglone 2 L/ha;Agropol 0.15 L/ha
4		Reglone 0.5 L/ha;Flydende N 30-2 76 L/ha
5		Mizuki 1 L/ha
6		Mizuki 1 L/ha;Flydende N 30-2 76 L/ha
7		Mizuki 1 L/ha;TopGun Finalsan Koncentrat 80 L/ha
8		Mizuki 1 L/ha;AdBlue 200 L/ha
9		Eddikkesyre 900 L/ha
10		NaCl køkkensalt 100 kg/ha



Aarhus University, Department of Agroecology, Flakkebjerg

Nedvisning af spinat - alternative midler

Trial ID:21429	Location:Lystager Torp	Trial Year:2021	
Protocol ID:21429	Investigator:Andrius Hansen Kemezys		
Project ID:33254	Study Director:		
	Sponsor Contact:		

Crop Code	SPQOL	SPQOL	SPQOL	SPQOL
BBCH Scale	BVNH	BVNH	BVNH	BVNH
Crop Name	Spinach	Spinach	Spinach	Spinach
Rating Date	28-07-2021	30-07-2021	02-08-2021	04-08-2021
SE Name	ZUSX041	ZUSX041	ZUSX041	ZUSX041
Part Rated	PLANT; C	PLANT; C	PLANT; C	PLANT; C
Rating Type	DESICC	DESICC	DESICC	DESICC
Rating Unit	%AREA	%AREA	%AREA	%AREA
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Assessed By	PHA	PHA	PHA	PHA
Trt-Eval Interval	1 DA-A	3 DA-A	6 DA-A	8 DA-A
Trt Treatment	Rate	Other	Other	Appl
No. Name	Rate Unit	Rate	Rate Unit	Code
1Untreated Check				1
2Reglone	0,5L/ha			2
Agropol	0,15L/ha			3
3Reglone	2L/ha			4
Agropol	0,15L/ha			
4Reglone	0,5L/ha			
Flydende N 30-2	76L/ha			
5Mizuki	1L/ha			
6Mizuki	1L/ha			
Flydende N 30-2	76L/ha			
7Mizuki	1L/ha			
TopGun Finalsan Koncentrat	80L/ha			
8Mizuki	1L/ha			
AdBlue	200L/ha			
9Eddikkessyre	900L/ha			
10NaCl køkkensalt	100kg/ha			
LSD P=.05	16,76	14,98	9,21	9,15
Standard Deviation	11,55	10,32	6,34	6,31
CV	18,63	13,47	7,61	6,9
Grand Mean	62,00	76,63	83,38	91,38
Levene's F	3,041	1,61	1,867	1,717
Levene's Prob(F)	0,01*	0,157	0,097	0,128
Rank X2	.	.	.	.
P(Rank X2)	.	.	.	.
Skewness	-0,2458	-0,8511*	-0,18	-0,574
Kurtosis	-0,7958	-0,2411	-0,5262	-0,5822
Replicate F	1,836	3,572	7,509	5,503
Replicate Prob(F)	0,1644	0,0269	0,0008	0,0044
Treatment F	1,168	2,503	5,177	2,564
Treatment Prob(F)	0,3535	0,0315	0,0004	0,0282

Crop Code
SPQOL, BVNH, Spinacia oleracea, Spinach = US

Part Rated
PLANT = plant
C = Crop is Part Rated

Rating Type
DESICC = desiccation

Rating Unit
%AREA = percent of area

PLOT = total plot

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Aarhus University, Department of Agroecology, Flakkebjerg**Nedvisning af spinat - alternative midler**

Trial ID:21429 Location:Lystager Torp Trial Year:2021
 Protocol ID:21429 Investigator:Andrius Hansen Kemezys
 Project ID:33254 Study Director:
 Sponsor Contact:

Crop Code	SPQOL	SPQOL	SPQOL	SPQOL		
BBCH Scale	BVNH	BVNH	BVNH	BVNH		
Crop Name	Spinach	Spinach	Spinach	Spinach		
Rating Date	28-07-2021	30-07-2021	02-08-2021	04-08-2021		
SE Name	ZUSX041	ZUSX041	ZUSX041	ZUSX041		
Part Rated	PLANT; C	PLANT; C	PLANT; C	PLANT; C		
Rating Type	DESICC	DESICC	DESICC	DESICC		
Rating Unit	%AREA	%AREA	%AREA	%AREA		
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT		
Assessed By	PHA	PHA	PHA	PHA		
Trt-Eval Interval	1 DA-A	3 DA-A	6 DA-A	8 DA-A		
Trt Treatment	Rate	Other	Other	Appl		
No. Name	Rate Unit	Rate	Rate Unit	Code		
		Plot				
		1	2	3		
		4				
1Untreated Check		101	40,0	50,0	70,0	80,0
		205	65,0	80,0	85,0	90,0
		303	60,0	70,0	80,0	90,0
		401	50,0	60,0	75,0	85,0
		Mean =	53,8	65,0	77,5	86,3
2Reglone	0,5L/ha	A	106	70,0	80,0	80,0
Agropol	0,15L/ha	A	210	65,0	75,0	80,0
		305	65,0	80,0	85,0	95,0
		404	80,0	90,0	90,0	100,0
		Mean =	70,0	81,3	83,8	92,5
3Reglone	2L/ha	A	109	70,0	85,0	90,0
Agropol	0,15L/ha	A	209	65,0	90,0	100,0
		307	70,0	95,0	100,0	100,0
		406	60,0	90,0	100,0	100,0
		Mean =	66,3	90,0	97,5	100,0
4Reglone	0,5L/ha	A	103	70,0	80,0	90,0
Flydende N 30-2	76L/ha	A	204	80,0	90,0	95,0
		309	60,0	80,0	90,0	100,0
		405	70,0	85,0	95,0	100,0
		Mean =	70,0	83,8	92,5	100,0
5Mizuki	1L/ha	A	108	50,0	60,0	70,0
		206	40,0	60,0	70,0	80,0
		302	70,0	90,0	90,0	100,0
		402	60,0	80,0	90,0	100,0
		Mean =	55,0	72,5	80,0	91,3
6Mizuki	1L/ha	A	102	60,0	70,0	75,0
Flydende N 30-2	76L/ha	A	201	50,0	50,0	60,0
		308	70,0	80,0	90,0	100,0
		408	60,0	80,0	80,0	90,0
		Mean =	60,0	70,0	76,3	87,5
7Mizuki	1L/ha	A	105	60,0	80,0	80,0
TopGun Finalsan Koncentrat	80L/ha	A	202	50,0	85,0	85,0
		304	80,0	90,0	90,0	95,0
		410	80,0	90,0	100,0	100,0
		Mean =	67,5	86,3	88,8	92,5
8Mizuki	1L/ha	A	110	40,0	50,0	70,0
AdBlue	200L/ha	A	207	50,0	70,0	70,0
		301	80,0	85,0	85,0	90,0
		403	80,0	90,0	90,0	100,0
		Mean =	62,5	73,8	78,8	87,5
9Eddikkesyre	900L/ha	A	104	50,0	60,0	70,0
		203	70,0	85,0	85,0	95,0
		306	50,0	70,0	80,0	85,0
		409	70,0	80,0	90,0	95,0
		Mean =	60,0	73,8	81,3	88,8
10NaCl køkkensalt	100kg/ha	A	107	70,0	80,0	80,0
		208	40,0	50,0	70,0	80,0
		310	50,0	70,0	80,0	90,0
		407	60,0	80,0	80,0	90,0
		Mean =	55,0	70,0	77,5	87,5

Crop Code
 SPQOL, BVNH, Spinacia oleracea, Spinach = US
 Part Rated
 PLANT = plant
 C = Crop is Part Rated
 Rating Type
 DESICC = desiccation
 Rating Unit
 %AREA = percent of area
 PLOT = total plot

Aarhus University, Department of Agroecology, Flakkebjerg

Nedvisning i purløg 2021.

Trial ID:21443 Location:Vollerup Trial Year:2021
 Protocol ID:21443 Investigator:Andrius Hansen Kemezys
 Project ID:33254 Study Director:

General Trial Information

Study Director:Peter Hartvig **Title:**Study director
Investigator:Andrius Hansen Kemezys **Title:**Academic employee

Discipline:H herbicide
Trial Status:F final (completed)
ARM Trial Created On:28-06-2021

Planned Completion Date:01-12-2021

Trial Location

Country:DNK Denmark
Climate Zone:EPOMAR EPPO Maritime

Conducted Under GLP:No
Conducted Under GEP:Yes

Conclusions:

Forsøget blev udført i en flerårig purløg mark ved Vollerup ca. 4 km nordøst for forskningscenter Flakkebjerg. Forsøget blev udført som small plot forsøg med 1 m² parceller, og havde til formål at teste effekt af alternative produkter til Reglone + Agropol til nedvisning af purløg til frø, før høst. De testede produkter er TopGun Finalsan Koncentrat og Mizuki med og uden tilsætning af henholdsvis flydende N30-2 og TopGun Finalsan Koncentrat. Desuden er Roundup Bio afprøvet.

Behandlingerne blev udført den 6. juli og 12. juli, henholdsvis 10 dage før forventet høst og 3-4 dage før forventet høst. Purløgene blev bedømt for nedvisning 5 gange efter behandlingen, henholdsvis 2, 4, 7, 8, 9, 10, 11, 13, 15, og 17 dage efter behandlingerne. Efter den sidste bedømmelse blev der udtaget frøprøver til spiringsanalyse, som blev udført i januar-februar 2022.

Ved bedømmelserne blev det konstateret, at ingen af de alternative produkter havde tilstrækkelig effekt til nedvisning af purløg. Der var ingen signifikant forskel mellem de alternative produkter, uanset om de blev anvendt alene eller blev tilsat NS 30-2 eller TopGun Finalsan Koncentrat. Nedvisningen i disse led var kun 17-40%, hvilket er utilstrækkelig. Det var kun reference leddet med 2,0 l/ha Reglone + 0,15 l/ha Agropol, som kunne vise en acceptabel nedvisning, der var signifikant forskellig fra ubehandlet og øvrige behandlinger ved alle bedømmelsestidspunkter. Effekten toppede 7 dage efter behandlingen med 72%.

Spiringsanalyse for spirehastighed og spireevne har ikke vist noget signifikant forskel mellem ubehandlet og de testede led.

Contacts

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Investigator:Andrius Hansen Kemezys **Title:**Academic employee
Organization:Aarhus University, Department of Agroecology
Address:Forsøgsvej 1, Flakkebjerg
City+State/Prov:Slagelse **Mobile No.:**+4526796484
Postal Code:4200 **E-mail:**ahk@agro.au.dk

Crop Description

Crop 1:ALLSC Allium schoenoprasum Chives
Stage Scale:BBCH **BBCH Scale:**BMON

Pest Description

Establishment Date:17-03-2021

Site and Design

Treated Plot Width:1 m **Site Type:**FIELD field
Treated Plot Length:1 m **Experimental Unit:**1 PLOT plot
Treated Plot Area:1 m² **Treatments:**12 **Tillage Type:**CONTIL conventional-till
Replications:4 **Study Design:**RACOBL Randomized Complete Block (RCB)

Application Description		
	A	B
Application Date:	06-07-2021	12-07-2021
Appl. Start Time:	09:40	10:20
Appl. Stop Time:	10:20	10:45
Application Method:	SPRAY	SPRAY
Application Placement:	FOLIAR	FOLIAR
Applied By:	AHK, Christian	AHK, Christian
Appl. Entry Date:	13-01-2022	13-01-2022
Air Temperature Start, Stop:	-; 22,4 C	-; 23,8 C
% Relative Humidity Start, Stop:	-; 67,9	-; 67,2
Wind Velocity+Dir., Start:	3,6 MPS; SE	3,2 MPS; E
Wet Leaves (Y/N):	N; no	N; no
Soil Temperature, Unit:	19,2 C	21,2 C
Soil Moisture:	SLIWET	SLIWET
Soil Surface Condition:	COARSE	COARSE
% Cloud Cover:	20	5

Crop Stage At Each Application		
	A	B
Crop 1 Code, BBCH Scale:	ALLSC; BMON	ALLSC; BMON
Stage Majority, Percent:	71; -	71; -

Application Equipment		
	A	B
Appl. Equipment:	small plot	small plot
Equipment Type:	PSHCAP	PSHCAP
Operation Pressure:	2.0 BAR	2.0 BAR
Nozzle Size:	EVS9405	EVS9405
Nozzles/Row:	1	1
Band Width:	1 m	1 m
Boom Length:	1 m	1 m
Boom Height:	75 cm	75 cm
Ground Speed:	3.6 KPH	3.6 KPH
Carrier:	WATER	WATER
Spray Volume:	200 L/ha	200 L/ha

SE Definitions		
	1.	2.
Rating Timing	A1-A4	OE
SE Name	ZUSX041	ZUSX017
SE Description	% Dessication (100%=Defol+Desicc+Green Lf)	Seed - Germination
Part Rated	PLANT; C	SEED; C
Rating Type	DESICC	GERMIN
Rating Unit	% AREA	%
Sample Size	1 PLOT	100 SEED
Collection Basis	1 PLOT	1 PLOT
Reporting Basis	1 PLOT	100 SEED
Calculation	NC	IN
Number of Subsamples	1	1

Instructions:

Registreringer:

Timing	Nr.	Registreringer (ARM code)
2-3 dage efter B	1, 2	BBCH, DESICC
4-5 dage efter B	1, 2	BBCH, DESICC
7 dage efter B (lige inden høst)	1, 2	BBCH, DESICC
Ved høst	3	GERMIN

Nr	ARM code	SE name	Beskrivelse
1	BBCH		BBCH for afgrøde.
2	DESICC	ZUSX041	Nedvisning på spinat, %. Hvis relevant, udføres separat på stængler, blade og frø.
3	GERMIN	ZUSX017	Spirehastighed og spireevne, %.

Aarhus University, Department of Agroecology, Flakkebjerg

Nedvisning i purløg 2021.

Trial ID:21443 Location:Vollerup Trial Year:2021
 Protocol ID:21443 Investigator:Andrius Hansen Kemezys
 Project ID:33254 Study Director:
 Sponsor Contact:

Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	Appl Description	Spray Volume	Volume Unit
1	HERB	Untreated											
2	HERB ADJ	Reglone Agropol	200gA/L 1000gA/L	SL XL		0,5L/ha 0,15L/ha	L/ha	100g AI/ha 150g AI/ha	AI/ha	B B	3-4 dage før høst 3-4 dage før høst	200L/ha 200L/ha	L/ha
3	HERB ADJ	Reglone Agropol	200gA/L 1000gA/L	SL XL		2L/ha 0,15L/ha	L/ha	400g AI/ha 150g AI/ha	AI/ha	B B	3-4 dage før høst 3-4 dage før høst	200L/ha 200L/ha	L/ha
4	HERB	TopGun Finalsan Koncentrat	187gA/L	FL		80L/ha	L/ha	14960g AI/ha	AI/ha	B	3-4 dage før høst	200L/ha	L/ha
5	HERB	TopGun Finalsan Koncentrat	187gA/L	FL		120L/ha	L/ha	22400g AI/ha	AI/ha	B	3-4 dage før høst	200L/ha	L/ha
6	HERB	Mizuki	10,6gA/L	EC		1L/ha	L/ha	10,6g AI/ha	AI/ha	A	10 dage før høst	200L/ha	L/ha
7	HERB	Mizuki	10,6gA/L	EC		2L/ha	L/ha	21,2g AI/ha	AI/ha	A	10 dage før høst	200L/ha	L/ha
8	HERB	Mizuki	10,6gA/L	EC		4L/ha	L/ha	42,4g AI/ha	AI/ha	A	10 dage før høst	200L/ha	L/ha
9	HERB FERT	Mizuki Flydende N 30-2	10,6gA/L 392gA/L	EC F		1L/ha 76L/ha	L/ha	10,6g AI/ha 29800g AI/ha	AI/ha	A A	10 dage før høst 10 dage før høst	200L/ha 200L/ha	L/ha
10	HERB HERB	Mizuki TopGun Finalsan Koncentrat	10,6gA/L 187gA/L	EC FL		1L/ha 80L/ha	L/ha	10,6g AI/ha 14960g AI/ha	AI/ha	A A	10 dage før høst 10 dage før høst	200L/ha 200L/ha	L/ha
11	HERB FERT	Mizuki Flydende N 30-2	10,6gA/L 392gA/L	EC F		1L/ha 152L/ha	L/ha	10,6g AI/ha 59600g AI/ha	AI/ha	A A	10 dage før høst 10 dage før høst	200L/ha 200L/ha	L/ha
12	HERB	Roundup Bio	360gA/L	SC		2L/ha	L/ha	720g AI/ha	AI/ha	A	10 dage før høst	200L/ha	L/ha

Additional Treatment Information

Type
 HERB = Herbicide
 ADJ = Adjuvant
 FERT = Fertilizer

Treatment Name
 Untreated, , , = |
 Reglone, 200, gA/L, SL = diquat|200|
 Agropol, 1000, gA/L, XL = oil|1000|
 Mizuki, 10,6, gA/L, EC = pyraflufen-ethyl|10,6|
 Flydende N 30-2, 392, gA/L, F = nitrogren|392|
 Roundup Bio, 360, gA/L, SC = glyphosate|360|

Form Unit
 gA/L = grams active ingredient per litre formulated product

Form Type
 SL = soluble concentrate|Liquid||A clear to opalescent liquid to be applied as a solution of the active ingredient after dilution in water. The liquid may contain water insoluble formulants.
 XL = other, liquid ingredient|Liquid||Other liquid ingredient
 FL = flowable|Liquid||
 EC = emulsifiable concentrate|Liquid||A liquid, homogeneous formulation to be applied as an emulsion after dilution in water.
 F = flowable|Liquid||
 SC = suspension concentrate (= flowable concentrate)|Liquid||A stable suspension of active ingredient(s) in water, intended for dilution with water before use.

Rate Unit
 L/ha = Liters Product per Hectare (US=GAL/A)|T

Volume Unit
 L/ha = litres per hectare

Aarhus University, Department of Agroecology, Flakkebjerg

Nedvisning i purlæg 2021.

Trial ID:21443 Location:Vollerup Trial Year:2021
 Protocol ID:21443 Investigator:Andrius Hansen Kemezys
 Project ID:33254 Study Director:
 Sponsor Contact:

Trial Map Treatment Description

Trt	Code	Description
1	CHK	Untreated
2		Reglone 0.5 L/ha;Agropol 0.15 L/ha
3		Reglone 2 L/ha;Agropol 0.15 L/ha
4		TopGun Finalsan Koncentrat 80 L/ha
5		TopGun Finalsan Koncentrat 120 L/ha
6		Mizuki 1 L/ha
7		Mizuki 2 L/ha
8		Mizuki 4 L/ha
9		Mizuki 1 L/ha;Flydende N 30-2 76 L/ha
10		Mizuki 1 L/ha;TopGun Finalsan Koncentrat 80 L/ha
11		Mizuki 1 L/ha;Flydende N 30-2 152 L/ha
12		Roundup Bio 2 L/ha



Aarhus University, Department of Agroecology, Flakkebjerg

Nedvisning i purløg 2021.

Trial ID:21443	Location:Vollerup	Investigator (Creator): Andrius Hansen Kemezys	Trial Year:2021
Protocol ID:21443	Study Director:Peter Hartvig		
Project ID:33254	Sponsor Contact:		

Crop Type, Code	C; ALLSC	C; ALLSC	C; ALLSC	C; ALLSC	C; ALLSC	C; SPQOL		
Crop Name	Chives	Chives	Chives	Chives	Chives	Spinach		
Description	% Effekt	% Effekt	% Effekt	% Effekt	% Effekt			
Rating Date	14-07-2021	16-07-2021	19-07-2021	21-07-2021	23-07-2021	16-02-2022		
Part Rated	PLAMAT; C	PLAMAT; C	PLAMAT; C	PLAMAT; C	PLAMAT; C	SEED; C		
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	GERMIN		
Rating Unit/Min/Max	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100	%; 0; 100		
Sample Size						100 SEED		
Collection Basis						1 PLOT		
Reporting Basis						100 SEED		
Number of Subsamples	1	1	1	1	1	1		
Days After First/Last Applic.	8; 2	10; 4	13; 7	15; 9	17; 11	225; 219		
Trt-Eval Interval	2 DA-B	4 DA-B	7 DA-B	9 DA-B	11 DA-B			
ARM Action Codes	EC	EC	EC	EC	EC			
Number of Decimals	1	1	1	1	1	1		
Trt Treatment	Rate	Appl	1	2	3	4	5	6
No. Name	Description	Rate Unit Code						
1Untreated	Ubehandlet		0,0	0,0	0,0	0,0	0,0	98,3a
2Reglone		0,5L/ha B	12,5c	20,0c	25,0c	21,3c	16,3d	99,0a
	Agropol	0,15L/ha B						
3Reglone		2L/ha B	50,0a	70,0a	72,5a	61,3a	57,5a	99,5a
	Agropol	0,15L/ha B						
4TopGun Finalsans Koncentrat		80L/ha B	30,0bc	36,3bc	41,3bc	36,3bc	32,5bcd	99,5a
5TopGun Finalsans Koncentrat		120L/ha B	32,5b	43,8b	48,8b	41,3b	40,0b	98,3a
6Mizuki		1L/ha A	22,5bc	33,8bc	37,5bc	35,0bc	31,3bcd	98,5a
7Mizuki		2L/ha A	25,0bc	27,5bc	31,3bc	25,0bc	20,0cd	99,8a
8Mizuki		4L/ha A	28,8bc	35,0bc	38,8bc	33,8bc	31,3bcd	99,0a
9Mizuki		1L/ha A	26,3bc	40,0bc	43,8b	36,3bc	33,8bcd	99,0a
	Flydende N 30-2	76L/ha A						
10Mizuki		1L/ha A	36,3b	42,5b	48,8b	41,3b	37,5bc	99,8a
	TopGun Finalsans Koncentrat	80L/ha A						
11Mizuki		1L/ha A	26,3bc	41,3bc	47,5b	43,8b	40,0b	98,8a
	Flydende N 30-2	152L/ha A						
12Roundup Bio		2L/ha A	17,5bc	27,5bc	32,5bc	32,5bc	27,5bcd	99,5a
LSD P=.05			11,83	13,47	11,70	11,52	11,87	1,64
Standard Deviation			8,19	9,33	8,10	7,98	8,22	1,14
CV			29,31	24,58	19,06	21,53	24,61	1,15
Grand Mean			27,95	37,95	42,50	37,05	33,41	99,06
Levene's F			0,564	2,489	1,697	2,123	1,565	1,84
Levene's Prob(F)			0,831	0,024*	0,123	0,051	0,161	0,083
Rank X2			.	.	.	.	.	.
P(Rank X2)			.	.	.	.	.	.
Skewness			0,0518	0,0346	0,2434	0,3146	0,2589	-1,2306*
Kurtosis			-0,1006	1,0396	0,6398	0,549	0,2823	1,0025
Replicate F			5,519	2,446	2,250	3,488	3,195	0,186
Replicate Prob(F)			0,0039	0,0832	0,1028	0,0277	0,0376	0,9049
Treatment F			5,797	7,658	9,616	6,900	7,123	0,911
Treatment Prob(F)			0,0001	0,0001	0,0001	0,0001	0,0001	0,5410

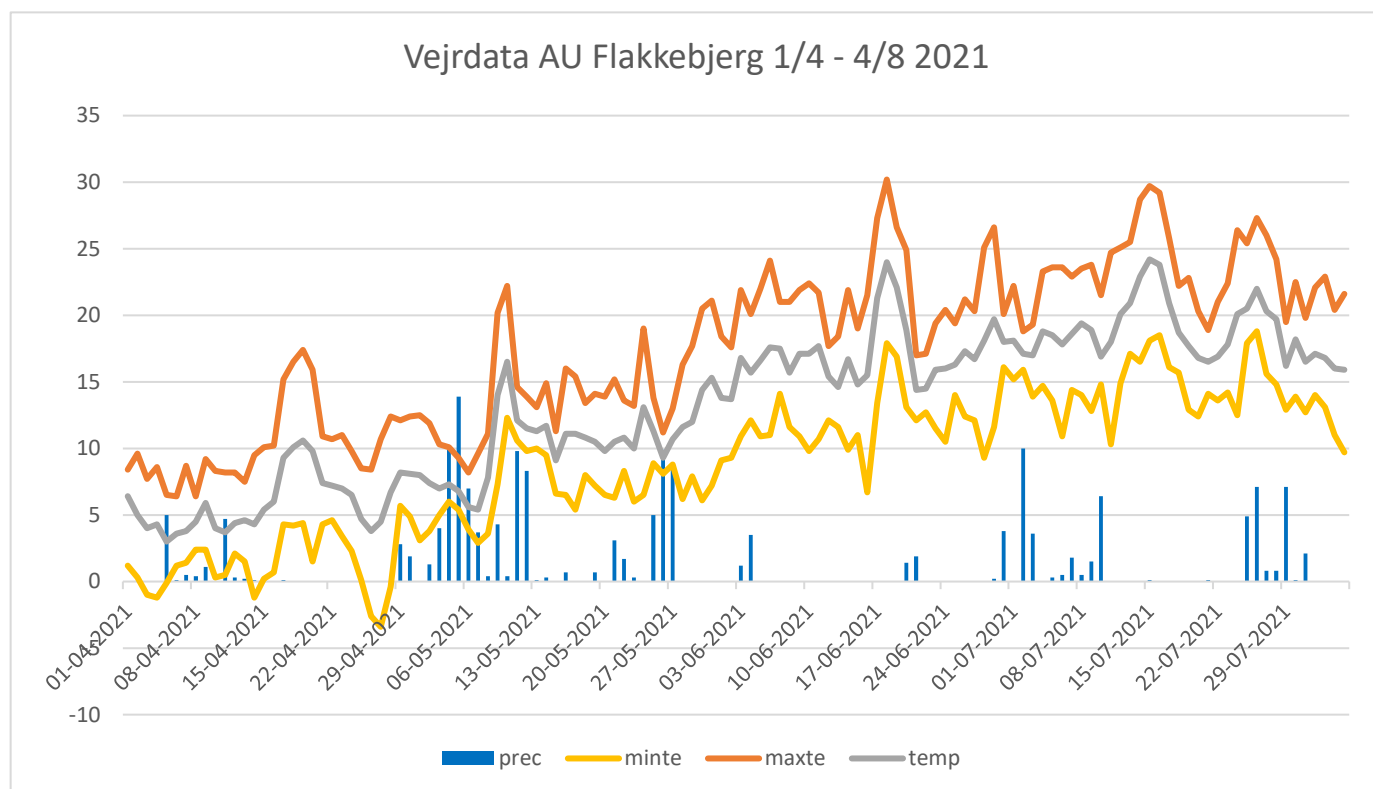
Crop Code	ALLSC, BMON, Allium schoenoprasum, Chives = IE
Part Rated	PLAMAT = plant - mature
	C = Crop is Part Rated
Rating Type	CONTRO = control / burndown or knockdown
Rating Unit	% = percent

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Crop Type, Code	C; ALLSC Chives % Effekt 14-07-2021 PLAMAT; C CONTRO %; 0; 100	C; ALLSC Chives % Effekt 16-07-2021 PLAMAT; C CONTRO %; 0; 100	C; ALLSC Chives % Effekt 19-07-2021 PLAMAT; C CONTRO %; 0; 100	C; ALLSC Chives % Effekt 21-07-2021 PLAMAT; C CONTRO %; 0; 100	C; ALLSC Chives % Effekt 23-07-2021 PLAMAT; C CONTRO %; 0; 100	C; SPQOL Spinach SEED; C GERMIN %; 0; 100 100 SEED 1 PLOT 100 SEED
Rating Date						16-02-2022
Part Rated						SEED; C
Rating Type						GERMIN
Rating Unit/Min/Max						%; 0; 100
Sample Size						100 SEED
Collection Basis						1 PLOT
Reporting Basis						100 SEED
Number of Subsamples	1	1	1	1	1	1
Days After First/Last Applic.	8; 2	10; 4	13; 7	15; 9	17; 11	225; 219
Trt-Eval Interval	2 DA-B	4 DA-B	7 DA-B	9 DA-B	11 DA-B	
ARM Action Codes	EC	EC	EC	EC	EC	
Number of Decimals	1	1	1	1	1	1
Trt Treatment	Rate Appl					
No. Name Description Rate Unit Code Plot	1	2	3	4	5	6
1Untreated Ubehandlet	104	0,0	0,0	0,0	0,0	98,0
	211	0,0	0,0	0,0	0,0	96,0
	309	0,0	0,0	0,0	0,0	100,0
	402	0,0	0,0	0,0	0,0	99,0
Mean =		0,0	0,0	0,0	0,0	98,3
2Reglone 0,5L/ha B	107	0,0	0,0	15,0	10,0	99,0
Agropol 0,15L/ha B	210	20,0	40,0	40,0	30,0	100,0
	312	20,0	30,0	30,0	30,0	100,0
	405	10,0	10,0	15,0	15,0	97,0
Mean =		12,5	20,0	25,0	21,3	99,0
3Reglone 2L/ha B	105	50,0	70,0	75,0	65,0	99,0
Agropol 0,15L/ha B	212	60,0	70,0	75,0	70,0	100,0
	303	40,0	70,0	70,0	60,0	99,0
	410	50,0	70,0	70,0	50,0	100,0
Mean =		50,0	70,0	72,5	61,3	99,5
4TopGun Finals Koncentrat 80L/ha B	101	20,0	20,0	30,0	25,0	99,0
	206	25,0	40,0	45,0	40,0	100,0
	304	40,0	50,0	55,0	55,0	99,0
	409	35,0	35,0	35,0	25,0	100,0
Mean =		30,0	36,3	41,3	36,3	99,5
5TopGun Finals Koncentrat 120L/ha B	112	35,0	50,0	50,0	40,0	99,0
	209	20,0	40,0	50,0	45,0	97,0
	307	45,0	45,0	50,0	45,0	100,0
	404	30,0	40,0	45,0	35,0	97,0
Mean =		32,5	43,8	48,8	41,3	98,3
6Mizuki 1L/ha A	110	10,0	40,0	40,0	35,0	98,0
	204	20,0	30,0	40,0	40,0	100,0
	301	25,0	30,0	35,0	30,0	96,0
	407	35,0	35,0	35,0	35,0	100,0
Mean =		22,5	33,8	37,5	35,0	98,5
7Mizuki 2L/ha A	109	10,0	10,0	15,0	15,0	100,0
	207	35,0	30,0	35,0	25,0	100,0
	302	25,0	30,0	35,0	30,0	100,0
	412	30,0	40,0	40,0	30,0	99,0
Mean =		25,0	27,5	31,3	25,0	99,8
8Mizuki 4L/ha A	106	20,0	20,0	30,0	30,0	99,0
	202	30,0	50,0	50,0	40,0	100,0
	310	35,0	40,0	40,0	40,0	99,0
	408	30,0	30,0	35,0	25,0	98,0
Mean =		28,8	35,0	38,8	33,8	99,0
9Mizuki 1L/ha A	111	10,0	40,0	40,0	35,0	99,0
Flydende N 30-2 76L/ha A	201	20,0	40,0	40,0	35,0	98,0
	306	40,0	40,0	50,0	40,0	100,0
	403	35,0	40,0	45,0	35,0	99,0
Mean =		26,3	40,0	43,8	36,3	99,0
10Mizuki 1L/ha A	102	30,0	40,0	50,0	45,0	99,0
TopGun Finals Koncentrat 80L/ha A	208	40,0	40,0	45,0	40,0	100,0
	305	35,0	50,0	55,0	45,0	100,0
	401	40,0	40,0	45,0	35,0	100,0
Mean =		36,3	42,5	48,8	41,3	99,8
11Mizuki 1L/ha A	103	30,0	50,0	60,0	55,0	100,0
Flydende N 30-2 152L/ha A	205	10,0	40,0	50,0	50,0	98,0
	308	30,0	40,0	40,0	40,0	99,0
	411	35,0	35,0	40,0	30,0	98,0
Mean =		26,3	41,3	47,5	43,8	98,8
12Roundup Bio 2L/ha A	108	10,0	10,0	15,0	15,0	100,0
	203	10,0	30,0	40,0	40,0	99,0
	311	30,0	30,0	30,0	30,0	99,0
	406	20,0	40,0	45,0	45,0	100,0
Mean =		17,5	27,5	32,5	32,5	99,5

<p>Crop Type, Code</p> <p>C = EPPO species (Bayer) codes</p> <p>ALLSC, BMON, Allium schoenoprasum, Chives = IE</p> <p>SPQOL, BVNH, Spinacia oleracea, Spinach = IE</p> <p>Part Rated</p> <p>PLAMAT = plant - mature</p> <p>SEED = seed</p> <p>C = Crop is Part Rated</p> <p>Rating Type</p> <p>CONTRO = control / burndown or knockdown|%PROPORTION</p> <p>GERMIN = germination|%PROPORTION</p> <p>Rating Unit/Min/Max</p> <p>%, 0, 100 = percent|PERCENT</p> <p>SEED = seed</p> <p>PLOT = total plot</p> <p>SEED = seed</p> <p>ARM Action Codes</p> <p>EC = Do not analyze untreated check, while still reporting treatment mean on AOV Means Table|NA</p>

Bilag 1. Vejrdata



Figur 1. Gennemsnitig (temp), Minimum (minte) and maximum (maxte) temperatur og nedbør (prec).

Bilag 2. Forsøgsplaner

Strategi forsøg 21427-1 -2 og -3

	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	0,15	Glyphosat	Betanal	1,0	Betanal	1,0						
3	Centium + Proman	0,15 + 0,5		Betanal	1,0	Betanal	1,0						
4	Centium + Proman	0,15 + 0,5		Betanal	1,0	Betanal	1,0	Pixxaro	0,125				
5	Centium + Proman	0,15 + 0,5		Pixxaro	0,05			Pixxaro	0,075				
6	Centium + Proman	0,15 + 0,5				Pixxaro	0,05			Pixxaro	0,075		
7	Centium + Proman	0,15 + 0,5						Pixxaro	0,125				
8	Centium + Proman	0,15 + 0,5				Pixxaro + Venzar	0,05 + 0,15			Pixxaro + Venzar	0,075 + 0,15		
9	Centium + Proman	0,15 + 0,5				Pixxaro + Asulox	0,05 + 0,5			Pixxaro + Asulox	0,075 + 0,5		
10	Centium + Proman	0,15 + 0,5				Pixxaro + Nortron + Renol	0,05 + 0,23 + 0,5			Pixxaro + Nortron + Renol	0,075 + 0,23 + 0,5		
11	Centium + Proman	0,15 + 0,5						Pixxaro + Asulox	0,05 + 0,5			Pixxaro + Asulox	0,075 + 0,5
12	Centium + Proman	0,15 + 0,5						Pixxaro + Nortron + Renol	0,05 + 0,23 + 0,5			Pixxaro + Nortron + Renol	0,075 + 0,23 + 0,5
13	Centium + Venzar	0,15 + 0,75				Pixxaro + Nortron + Renol	0,05 + 0,23 + 0,5			Pixxaro + Nortron + Renol	0,075 + 0,23 + 0,5		

Stress forsøg 21428

		Såtid 1			
		A	B	C	D
		BBCH 12-14	BBCH 14-16	BBCH 16-18	1 uge efter C
1	Ubehandlet				
2	Betanal	1,0	1,0		
3	Pixxaro EC	0,05		0,075	
4	Pixxaro EC		0,05		0,075
5	Pixxaro EC			0,125	
6	Pixxaro EC			0,2	
7	Proman		0,15	0,15	
8	Proman		0,15	0,3	
9	Proman		0,15	0,6	
10	Tromling			X	
11	Tromling				X
Alm. blokforsøg med 1 såtid (44 parceller)					
Ukrudtsfri					
Bedømmelser for skade, analyser for "selfings"					

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.