

Faglig Beretning 2020

Projektets titel

Lave doseringer af nye bladmidler til ukrudtsbekæmpelse i kartofler

Tilskudsmodtager

Aarhus Universitet,
Science and Technology, Institut for Agroøkologi
Forsøgsvej 1, Flakkebjerg
4200 Slagelse
CVR nummer 31119103
Tlf. 87156000, Web: www.agrsci.au.dk

Kontaktperson Forsøgsleder Peter Hartvig peter.hartvig@agro.au.dk

Kartoffelafgiftsfonden

Lave doseringer af nye bladmidler til ukrudtsbekæmpelse i kartofler

Projektstart:
Marts 2020

Projektafslutning:
December 2020

Resumé

Aarhus Universitet (AU) i Flakkebjerg har i 2020 udført et forsøg med anvendelse af ukrudtsmidler i lave split-doser efter fremspiring af kartofler. Efter at dispensation af Titus anses for usandsynlig er der behov for at udvikle nye måder at bekæmpe ukrudt i kartofler efter fremspiring.

I forsøget er Fenix, Boxer, Centium og Proman afprøvet i strategier med 2 eller 3 sprøjtninger alene eller i blanding. Alle behandlinger med Fenix medførte visuelt tydelige skader, især ved 3 sprøjtninger. Øvrige midler viste kun svage skadessymptomer, som hurtigt skjultes af nyvækst. Det galdt også skaderne af Fenix, der dog kunne ses i en længere periode. Ved måling af udbytte viste stort set alle strategier med 3 Fenix sprøjtninger et signifikant udbyttetab på 15-20% i forhold til ubehandlet. Alle øvrige behandlinger var på niveau med ubehandlet (uden ukrudt).

Projektets faglige forløb

Med støtte fra Kartoffelafgiftsfonden har Aarhus Universitet i Flakkebjerg i 2020 udført et forsøg med anvendelse af ukrudtsmidler i lave split-doser efter fremspiring af kartofler. Baggrunden er, at der er behov for at udvikle ukrudtsmidler til anvendelse efter fremspiring af kartofler. Titus WG har i en årrække været på dispensation, men den mulighed anses ikke for realistisk længere. Inspirationen til forsøget er hentet i grønsagsavlen, hvor man i snart mange år har praktiseret at køre efter fremspiring med lave doseringer af ukrudtsmidler, der normalt kun er selektive som jordmidler før fremspiring. Behandlingerne giver ofte visuelle skader, men erfaringen er at de er forbigående, og ikke påvirker kvalitet og udbytte. Samtidig har de gentagne behandlinger god effekt på ukrudtet trods forholdsvis lave doseringer. Kartofler er både forholdsvis robuste, og har en lang vækstperiode, så derfor er der grund til at tro, at de vil kunne kompensere for selv ret tydelige skader.

De afprøvede produkter har alle en godkendelse i kartofler i forvejen, men hovedparten af dem må kun anvendes som jordmiddel før fremspiring. Der eksisterer imidlertid som nævnt mange erfaringer fra grønsager, hvor de samme midler har vist deres potentiale, anvendt som bladmidler i splitstrategier. Med flere midler, mulige doseringer og anvendelsestidspunkter er kombinationsmulighederne nærmest uendelige, og forsøgsplanen er derfor et forsøg på begrænse sig til de mest praksisnære anvendelser. Således er de fire produkter Fenix, Proman, Boxer og Centium afprøvet med en fast dosering (med vilje til den lidt høje side) i henholdsvis to og tre sprøjtninger samt i en række tankblandinger. Forsøgsplanen er gengivet i tabel 1. Første behandling er foretaget den 2. juni med lidt over 50% fremspirende kartofler. Efterfølgende behandlinger er foretaget henholdsvis 5 og 8 dage senere.

Forsøgets primære formål var at undersøge kartoflernes tolerance i forhold til behandlingerne samt at klarlægge eventuel sammenhæng mellem visuelle skadesniveau og udbytte. For at reducere eventuel påvirkning fra ukrudt, er der sprøjtet med glyphosat lige før fremspiring, og ukrudtstrykket har generelt været lavt i marken. Alligevel har en enkel måling af effekt på ukrudt vist høj effekt af behandlinger, der indeholdt enten Fenix eller Proman, mens behandlinger med Boxer og Centium alene også har god effekt, men på et lidt lavere niveau.

Kartoffelafgiftsfonden

Bedømmelserne for skade viste tydeligt, at behandlinger indeholdende Fenix medførte ret markante skader, og at det især var udpræget ved tre behandlinger. De visuelle skader efter Boxer, Centium og Proman var på et betydeligt lavere niveau, og blev hurtigt udvisket af nyvækst. Boxer og Proman skaderne kunne knap nok ses. Fenix skaderne var derimod synlige i længere tid, selvom nyvækst efter nogle uger også skjulte skaderne.

Ved opgørelse af udbytte er der fundet signifikante udbyttetab i størrelsesordenen 15-20% i forhold til ubehandlet i alle forsøgsled, hvor Fenix indgår med 3 behandlinger. Eneste undtagelse er 3 x Fenix – Proman, der ikke er signifikant forskellig fra ubehandlet. Alle øvrige behandlinger var ikke signifikant forskellige fra ubehandlet. Som nævnt var der kun lidt ukrudt på arealet, som i ubehandlede parceller er bortluget, så udbyttet ikke er påvirket af ukrudtstryk. Målinger af pesticidrestindhold i knolde fra de mest intensivt behandlede led viste intet restindhold.

Det kan konkluderes, at alle midler har potentiale til anvendelse efter fremspiring, dog bør dosering af Fenix og antal behandlinger overvejes at reduceres. Fenix og Boxer har i dag godkendelser til anvendelse efter fremspiring af kartofler, men de øvrige midler bør også overvejes at ansøges. Inden da bør behov for restforsøg dog afklares. En samlet rapport indeholdende alle oplysninger og resultater er indsat som bilag til denne beretning.

Tabel 1. Forsøgsplan for afprøvning af jordherbicer efter fremspiring af kartofler i forskellige lavdosis strategier eller tankblandinger.

	Produkt	Dosering	Tidspunkter	Samlet dosering
1.	Ubehandlet			
2.	Fenix	0,35	Ukrudt kimblade* + 5-6 dage	0,7
3.	Fenix	0,35	Ukrudt kimblade* + 5-6 dage + 5-6 dage	1,05
4.	Proman	0,4	Ukrudt kimblade* + 5-6 dage	0,8
5.	Proman	0,4	Ukrudt kimblade* + 5-6 dage + 5-6 dage	1,2
6.	Boxer	2,5	Ukrudt kimblade* + 5-6 dage	5,0
7.	Boxer	2,5	Ukrudt kimblade* + 5-6 dage + 5-6 dage	7,5
8.	Centium	0,1	Ukrudt kimblade* + 5-6 dage	0,2
9.	Centium	0,1	Ukrudt kimblade* + 5-6 dage + 5-6 dage	0,3
10.	Fenix + Boxer	0,25 + 1,0	Ukrudt kimblade* + 5-6 dage	0,5 + 2,0
11.	Fenix + Boxer	0,25 + 1,0	Ukrudt kimblade* + 5-6 dage + 5-6 dage	0,75 + 3,0
12.	Fenix + Centium	0,25 + 0,08	Ukrudt kimblade* + 5-6 dage	0,5 + 0,16
13.	Fenix + Centium	0,25 + 0,08	Ukrudt kimblade* + 5-6 dage + 5-6 dage	0,75 + 0,24
14.	Fenix + Proman	0,25 + 0,25	Ukrudt kimblade* + 5-6 dage	0,5 + 0,5
15.	Fenix + Proman	0,25 + 0,25	Ukrudt kimblade* + 5-6 dage + 5-6 dage	0,75 + 0,75

Offentliggørelse af projektets resultater

Projektet skulle have været præsenteret og fremvist ved et "Åbent Hus" arrangement i Flakkebjerg, der desværre blev aflyst pga. covid-19.

Der er i 2021 søgt et nyt projekt sammen med SEGES. Dette projekt, der kunne have forøget erfaringerne med brugen af disse strategier fik desværre afslag. Videngrundlaget for yderligere publikationer end denne faglige beretning synes derfor ikke at være tilstede.



DEPARTMENT OF AGROECOLOGY
AARHUS UNIVERSITY

Endelig rapport over GEP forsøg 20175-01

Afprøvning af forskellige jordherbicider i forskellige lavdosis eller i tankblandinger, efter fremspiring af kartofler.



Steen Sørensen
Peter Hartvig

Januar 2021



Indhold

Indhold	2
TITEL SIDE.....	3
Plan med aktiv indhold	5
Konklusion	7
Vejr data ved behandling	9
Beskrivelse	10
Bedømmelser	15
Udbytte.....	22
Rådata.....	24
Appendix 1. The Climate in Flakkebjerg 2019-2020	29
Appendix 2. GEP certificate	34



DEPARTMENT OF AGROECOLOGY
AARHUS UNIVERSITY

TITEL SIDE

Titel: Afprøvning af forskellige jordherbicer I forskellige lavdosis eller I tankblandinger, efter fremspiring af kartofler.

Antal forsøg: 1

Forsøgsnummer: 20175-01

Antal sider: 34

Lokalitet: 55.318987 11.388874
Forsøgsvej 1
4200 Slagelse



Udført for: Kartoffelafgiftfonden.

Udført af: Aarhus Universitet
Department of Agroecology
AU Flakkebjerg
Forsøgsvej 1
DK-4200 Slagelse

Forsøgs periode: April 2020 – November 2020

Rapport forfatter: Steen Sørensen

Forsøgs leder: Peter Hartvig

Forsøgs tekniker (AU): Verner Lindberg, Steen Sørensen

Laborant tekniker (AU): Lena Christensen


Fagfællebedømmer: Verner Lindberg

Udførelseskriterier: Udført efter GEP retningslinjer (Good experimental practice)

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

Rådata: Kan rekvireres hos forfatteren

Det bekræftes hermed, at forsøget er gennemført i overensstemmelse med principperne for GEP:

1. februar 2021 
Dato Peter Hartvig

Trt No.	Type	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Timing	Appl Code	Comment 1
1	CHK	Untreated Check									
2	HERB	Fenix	600	SC	0,35	L/ha	210	g AI/ha		A	Ukrudt kimblade
	HERB	-aclonifen	600	SC	0,35	L/ha	210	g AI/ha		B	+ 5 - 6 dage
3	HERB	Fenix	600	SC	0,35	L/ha	210	g AI/ha		A	Ukrudt kimblade
	HERB	-aclonifen	600	SC	0,35	L/ha	210	g AI/ha		B	+ 5 - 6 dage
	HERB	Fenix	600	SC	0,35	L/ha	210	g AI/ha		C	+ 5 - 6 dage
4	HERB	Proman	500	SC	0,4	L/ha	200	g AI/ha		A	Ukrudt kimblade
	HERB	-Metobromuron	500	SC	0,4	L/ha	200	g AI/ha		B	+ 5 - 6 dage
5	HERB	Proman	500	SC	0,4	L/ha	200	g AI/ha		A	Ukrudt kimblade
	HERB	-Metobromuron	500	SC	0,4	L/ha	200	g AI/ha		B	+ 5 - 6 dage
	HERB	Proman	500	SC	0,4	L/ha	200	g AI/ha		C	+ 5 - 6 dage
6	HERB	Boxer	800	EC	2,5	L/ha	2000	g AI/ha		A	Ukrudt kimblade
	HERB	-prosulfocarb	800	EC	2,5	L/ha	2000	g AI/ha		B	+ 5 - 6 dage
7	HERB	Boxer	800	EC	2,5	L/ha	2000	g AI/ha		A	Ukrudt kimblade
	HERB	-prosulfocarb	800	EC	2,5	L/ha	2000	g AI/ha		B	+ 5 - 6 dage
	HERB	Boxer	800	EC	2,5	L/ha	2000	g AI/ha		C	+ 5 - 6 dage
8	HERB	Centium	360	CS	0,1	L/ha	36	g AI/ha		A	Ukrudt kimblade
	HERB	-Clomazone	360	CS	0,1	L/ha	36	g AI/ha		B	+ 5 - 6 dage
9	HERB	Centium	360	CS	0,1	L/ha	36	g AI/ha		A	Ukrudt kimblade
	HERB	-Clomazone	360	CS	0,1	L/ha	36	g AI/ha		B	+ 5 - 6 dage
	HERB	Centium	360	CS	0,1	L/ha	36	g AI/ha		C	+ 5 - 6 dage
10	HERB	Fenix	600	SC	0,25	L/ha	150	g AI/ha		A	Ukrudt kimblade
	HERB	-aclonifen	600	SC	0,25	L/ha	150	g AI/ha		A	
	HERB	Boxer	800	EC	1,0	L/ha	800	g AI/ha		A	
	HERB	-prosulfocarb	800	EC	1	L/ha	800	g AI/ha		A	
11	HERB	Fenix	600	SC	0,25	L/ha	150	g AI/ha		A	Ukrudt kimblade
	HERB	-aclonifen	600	SC	0,25	L/ha	150	g AI/ha		A	
	HERB	Boxer	800	EC	1,0	L/ha	800	g AI/ha		A	
	HERB	-prosulfocarb	800	EC	1	L/ha	800	g AI/ha		A	
	HERB	Fenix	600	SC	0,25	L/ha	150	g AI/ha		B	+ 5 - 6 dage
	HERB	-aclonifen	600	SC	0,25	L/ha	150	g AI/ha		B	
	HERB	Boxer	800	EC	1,0	L/ha	800	g AI/ha		B	
12	HERB	Fenix	600	SC	0,25	L/ha	150	g AI/ha		A	Ukrudt kimblade
	HERB	-aclonifen	600	SC	0,25	L/ha	150	g AI/ha		A	
	HERB	Centium	360	CS	0,08	L/ha	28,8	g AI/ha		A	
	HERB	-Clomazone	360	CS	0,08	L/ha	28,8	g AI/ha		A	

Trt No.	Type	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Timing	Appl Code	Comment 1
13	HERB	Fenix	600	SC	0,25	L/ha	150	g AI/ha		A	Ukrudt kimblade + 5 - 6 dage + 5 - 6 dage
		-aclonifen	600		0,25						
	HERB	Centium	360	CS	0,08	L/ha	28,8	g AI/ha		A	
		-Clomazone	360		0,08						
	HERB	Fenix	600	SC	0,25	L/ha	150	g AI/ha		B	
		-aclonifen	600		0,25						
14	HERB	Centium	360	CS	0,08	L/ha	28,8	g AI/ha		B	Ukrudt kimblade + 5 - 6 dage + 5 - 6 dage
		-Clomazone	360		0,08						
	HERB	Fenix	600	SC	0,25	L/ha	150	g AI/ha		C	
		-aclonifen	600		0,25						
	HERB	Centium	360	CS	0,08	L/ha	28,8	g AI/ha		C	
		-Clomazone	360		0,08						
14	HERB	Fenix	600	SC	0,25	L/ha	150	g AI/ha		A	Ukrudt kimblade + 5 - 6 dage + 5 - 6 dage
		-aclonifen	600		0,25						
	HERB	Proman	500	SC	0,25	L/ha	125	g AI/ha		A	
		-Metobromuron	500		0,25						
15	HERB	Fenix	600	SC	0,25	L/ha	150	g AI/ha		B	Ukrudt kimblade + 5 - 6 dage + 5 - 6 dage
		-aclonifen	600		0,25						
	HERB	Proman	500	SC	0,25	L/ha	125	g AI/ha		B	
		-Metobromuron	500		0,25						
	HERB	Fenix	600	SC	0,25	L/ha	150	g AI/ha		C	
		-aclonifen	600		0,25						
15	HERB	Proman	500	SC	0,25	L/ha	125	g AI/ha		C	Ukrudt kimblade + 5 - 6 dage + 5 - 6 dage
		-Metobromuron	500		0,25						
	HERB	Fenix	600	SC	0,25	L/ha	150	g AI/ha		C	
	-aclonifen	600		0,25							
	HERB	Proman	500	SC	0,25	L/ha	125	g AI/ha		C	
		-Metobromuron	500		0,25						

Replications: 4, Untreated treatments: 1, Conduct under GLP/GEP: Yes (GEP with no protection), Design: Randomized Complete Block (RCB), Treatment units: Treated 'Plot' experimental unit size, Dry Form. Unit: %, Treated 'Plot' experimental unit size Width: 2,25 meters, Treated 'Plot' experimental unit size Length: 10 meters, Application amount: 150 L/ha, Mix size: 3 L, Overage: 1.65 L, Format definitions: G-All7.def, G-All7.frm

Konklusion

20175-01

Et herbicidforsøg (selektivitet) i kartofler, der blev udført på fin sandblandet lerjord på Sjælland i den østlige del af Danmark. Forsøget er udført i overensstemmelse med protokollen, efter EPPO guidelines og GEP forskrifter (se certifikat på www.gepcertibase.eu). Forsøgets formål var at afprøve forskellige jordherbicer i forskellige lav dosis eller i tankblandinger, efter fremspiring af kartofler. Kartofflerne blev lagt ultimo april, den første behandling blev udført primo juni, da ca. 5 % af kartoflerne var fremspiret, de efter følgende split behandlinger blev udført med ca. 1 uges mellemrum, sidste behandling medio juni, da ca. 30 % af kartoflerne var fremspiret. Forsøgsarealet blev lige før fremspiring af kartoflerne grundbehandlet med glyphosat, hvilket bevirkede at der stort set ikke var noget ukrudt på arealet. Der er dog fortaget en enkelt bedømmelse for effekt på både en- og tokimbladet ukrudt, ultimo juni ca. 1 uge efter sidste split behandling. Der er fortaget bedømmelser for skader på afgrøden efter hver behandling, samt 7, 14, 28 og 42 dage efter den sidste behandling, i alt 6 bedømmelser. Der er ligeledes målt knoldudbytte samt målt indhold af stivelse i knoldene.

Der har efter behandlingen med 2 x 0,35L Fenix eller 3 x 0,35 L Fenix, været skader i form af lysfarvning af planterne samt nekroser på bladene og ved de senere bedømmelser ligeledes vækstreduktion, skaderne har været synlig på alle bedømmes tidspunkterne.

Der har efter behandlingen med 2 x 0,4 L Proman eller 3 x 0,4 L Proman, kun været nogle meget svage skader i form af vækstreduktion, ved de sidste bedømmelser.

Der har efter behandlingen med 2 x 2,5 L Boxer ikke været nogle synlige skader på afgrøden kartofler. Efter behandlingen med 3 x 2,5 L Boxer har der været nogle meget svage skader, dels i form af lysfarvning og ved den sidste bedømmelse i form af vækstreduktion.

Der har efter behandlingen med 2 x 0,1 L Centium eller 3 x 0,1 L Centium ikke været nogle synlige skader på afgrøden kartofler.

Der har efter behandlingen med 2 x 0,25 L Fenix + 1,0 L Boxer eller 3 x 0,25 L Fenix + 1,0 L Boxer været en del skader på afgrøden, signifikant størst efter 3-split behandlingen. Skaderne har været lysfarvning af planterne, nekroser på bladene samt vækstreduktion, ved bedømmelserne medio og ultimo juli er der ingen synlige skader efter 2-split behandlingen.

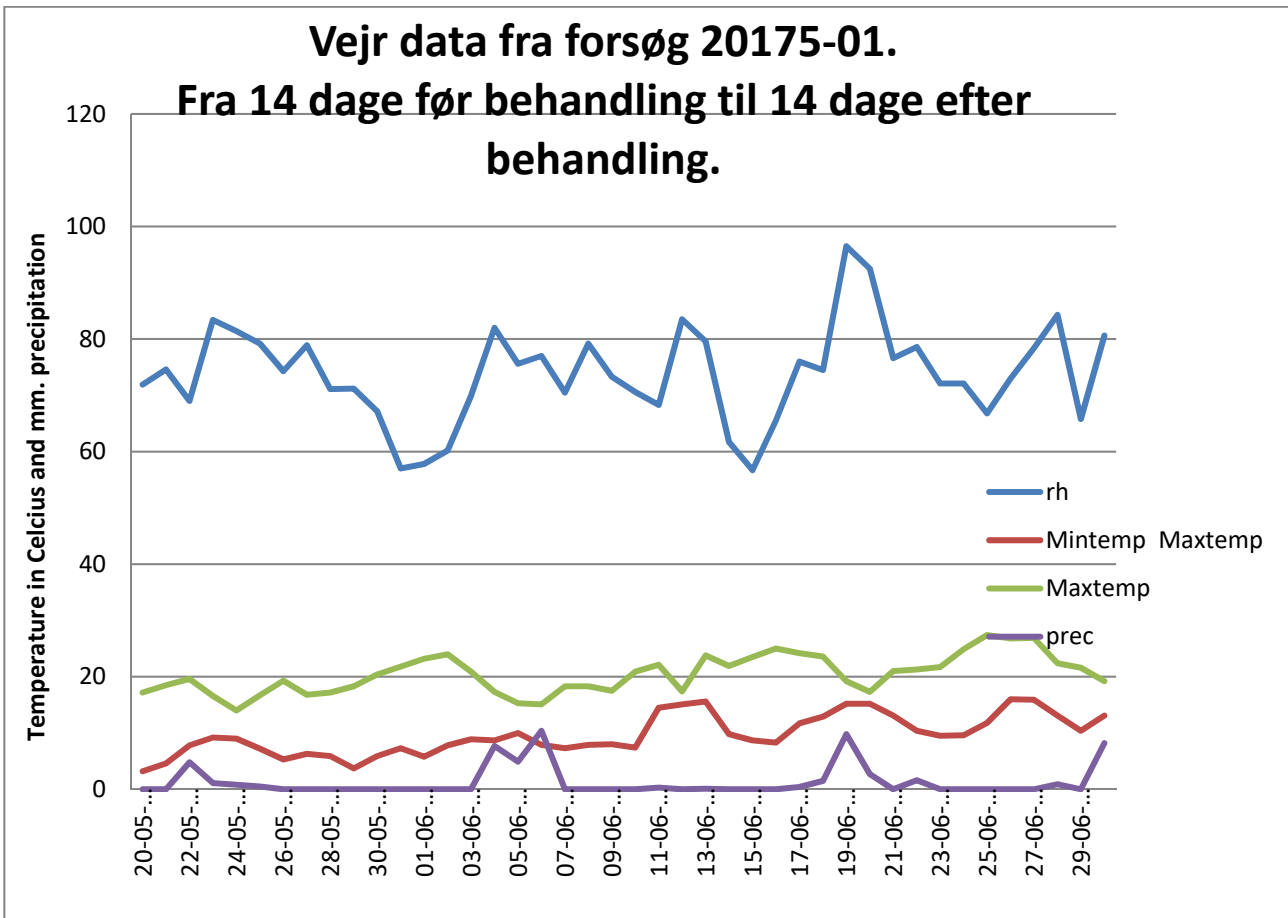
Der har efter behandlingen med 2 x 0,25 L Fenix + 0,08 L Centium eller 3 x 0,25 L Fenix + 0,08 L Centium været en del skader på afgrøden, signifikant størst efter 3-split behandlingen. Skaderne har været lysfarvning af planterne, nekroser på bladene samt vækstreduktion, ved bedømmelserne ultimo juli er der ikke signifikant forskel om det er 2-split- eller 3-split behandling der er dog lidt større skade efter 3-split behandlingen.

Der har efter behandlingen med 2 x 0,25 L Fenix + 0,25 L Proman eller 3 x 0,25 L Fenix + 0,25 L Proman været en del skader på afgrøden, signifikant størst efter 3-split behandlingen. Skaderne har været lysfarvning af planterne, nekroser på bladene samt vækstreduktion, ved bedømmelserne ultimo juli er der ingen synlige skader efter 2-split behandlingen.

Udbyttet efter 2-split behandlingerne er ikke signifikant forskellig fra ubehandlet, uanset hvilke produkter eller hvilken tankblandinger der er brugt, der er dog en tendens til at hvor Fenix er anvendt eller indgår i tankblandingen er udbyttet lavest. Udbyttet efter 3-split behandlingerne er hvor der er anvendt Fenix eller Fenix indgår i tankblandingen, signifikant mindre en i ubehandlet, 3-split behandlingen med produkterne Proman, Boxer eller Centium, er der ikke signifikant forskellig i forhold til ubehandlet. Der er ingen signifikante forskelle på indhold af stivelse i knoldene uanset hvilken behandling der er udført.

Et ret sikkert forsøg som viser at hvor der er anvendt Fenix eller Fenix indgår i tankblandingen, så påvirkes afgrøden kartofler rent vækstmæssig negativt, og knold udbyttet reduceres ligeledes. Hvor produkterne Proman, Boxer eller Centium anvendes er der ingen negativ påvirkning af væksten, udbyttet er ligeledes på samme niveau eller lidt mindre end i ubehandlet, ingen signifikante forskelle.

Vejr data ved behandling



Aarhus University, Department of Agroecology, Flakkebjerg
 Afprøvning af forskellige jordherbicider i forskellige lavdosis eller tankblandinger, efter fremspiring af kartofler.
 Trial ID: 20175-01 Location: Flakkebjerg Trial Year: 2020
 Protocol ID: 20175 Investigator: Steen Sørensen
 Project ID: 33971 Study Director:
 Official Trial ID: Sponsor Contact: Kartoffelafgift fond
 Conducted Under GEP: Yes

General Trial Information

Study Director: Steen Sørensen **Title:** Research leader
Investigator: Steen Sørensen **Title:** Research leader

Discipline: H herbicide
Trial Status: F one-year/final **Trial Reliability:** GOOD
ARM Trial Created On: May-26-2020
Initiation Date: May-26-2020
Completion Date: Oct-15-2020

Trial Location

City: Slagelse **Country:** DNK Denmark
State/Prov.: Region Sjælland
Postal Code: 4200 **Climate Zone:** EPOMAR Eppo Maritime

Latitude of LL Corner °: 55,318987 N
Longitude of LL Corner °: 11,388874 E

Conducted Under GLP: No
Conducted Under GEP: Yes

Study Rules: Default

No.	Guideline	Discipline	Description
1.	PP 1/51(3)	H	Weeds in potato
2.	PP 1/135(4)	GS	Phytotoxicity assessment
3.	PP 1/152(4)	GS	Design and analysis of efficacy evaluation trials
4.	PP 1/181(4)	GS	Conduct and reporting of efficacy evaluation trials including GEP

Contacts

Study Director: Steen Sørensen **Title:** Research leader
Organization: University of Aarhus, Department of Agroecologi
Address: Forsøgsvej 1 Flakkebjerg **Phone No.:** +45 87158206
City+State/Prov: Denmark **Mobile No.:** +4522283389
Postal Code: 4200 **E-mail:** SteenC.Sorensen@agro.au.dk
Country: DNK Denmark

Investigator: Steen Sørensen **Title:** Research leader
Organization: University of Aarhus, Department of Agroecologi
Address: Forsøgsvej 1 Flakkebjerg **Phone No.:** +45 87158206
City+State/Prov: Denmark **Mobile No.:** +4522283389
Postal Code: 4200 **E-mail:** SteenC.Sorensen@agro.au.dk
Country: DNK Denmark

Sponsor: Kartoffelafgift fond

Crop Description

Crop 1: C SOLTU Solanum tuberosum Potato **BBCH Scale:** BPOT
Entry Date: Jun-3-2020 **Stage Scale:** BBCH
Variety: Signum
Planting Date: Apr-23-2020 **Planting Density:** 40400 P/ha
Rows per Plot: 3
Row Spacing: 75 cm
Harvest Date: Oct-19-2020

Pest Description		
Pest 1	Type: W	Code: POLAV Polygonum aviculare Common Name: Knotgrass
		Entry Date: Jun-3-2020
Pest 2	Type: W	Code: CAPBP Capsella bursa-pastoris Common Name: Shepherd's purse
		Entry Date: Jun-3-2020
Pest 3	Type: W	Code: CHEAL Chenopodium album Common Name: Fat-hen
		Entry Date: Jun-3-2020
Pest 4	Type: W	Code: POAAN Poa annua Common Name: Annual meadow grass
		Entry Date: Jun-3-2020
Pest 5	Type: W	Code: POLCO Fallopia convolvulus Common Name: Black bindweed
		Entry Date: Jun-3-2020
Pest 6	Type: W	Code: LAMPU Lamium purpureum Common Name: Red deadnettle
		Entry Date: Jun-3-2020

Site and Design		
Treated Plot Width:	2,25 m	Site Type: FIELD field
Treated Plot Length:	10 m	Experimental Unit: 60 PLOT plot
Treated Plot Area:	22,5 m ²	Treatments: 15
Replications:	4	Tillage Type: CONTIL conventional-till
		Study Design: RACOB Randomized Complete Block (RCB)

No.	Previous Crop	Year
1.	TRZAW	2019

Maintenance						
No.	Date	Type	Maintenance Product Name	Rate	Rate Unit	Tank Mix
1.	May-22-2020	HERB	Glyphomax H1	1,5	L/ha	no
2.	Jun-17-2020	FUNG	Revus	0,6	L/ha	no
3.	Jun-19-2020	INSE	Mospilan	0,25	kg/ha	no
4.	Jun-24-2020	FUNG	Revus	0,6	L/ha	no
5.	Jul-1-2020	FUNG	Revus	0,6	L/ha	no
6.	Jul-8-2020	FUNG	Revus	0,6	L/ha	no
7.	Jul-15-2020	FUNG	Revus	0,6	L/ha	no
8.	Jul-21-2020	FUNG	Narita	0,4	L/ha	yes
9.	Jul-21-2020	ADJ		0,1	L/ha	yes
10.	Jul-22-2020	FUNG	Revus	0,6	L/ha	no
11.	Jul-29-2020	FUNG	Revus	0,6	L/ha	no
12.	Aug-4-2020	FUNG	Propulse	0,45	L/ha	no
13.	Aug-5-2020	INSE	Mospilan	0,25	kg/ha	no
14.	Aug-5-2020	FUNG	Revus	0,6	L/ha	no
15.	Aug-10-2020	FUNG	Revus	0,6	L/ha	no
16.	Aug-18-2020	FUNG	Narita	0,4	L/ha	yes
17.	Aug-18-2020	ADJ		0,1	L/ha	yes
18.	Aug-19-2020	FUNG	Revus	0,6	L/ha	no
19.	Aug-27-2020	FUNG	Revus	0,6	L/ha	no
20.	Sep-1-2020	FUNG	Propulse	0,45	L/ha	no
21.	Sep-2-2020	FUNG	Revus	0,6	L/ha	yes
22.	Sep-2-2020	FUNG	Proxanil	2,0	L/ha	yes
23.	Sep-9-2020	FUNG	Revus	0,6	L/ha	yes
24.	Sep-9-2020	FUNG	Proxanil	2,0	L/ha	yes
25.	Sep-16-2020	FUNG	Revus	0,6	L/ha	no

Application Description			
	A	B	C
Application Date	Jun-2-2020	Jun-8-2020	Jun-15-2020
Appl. Start Time	9:45	10:30	11:00
Appl. Stop Time	11:15	11:30	11:45
Interval to Prev. Appl.		6 DAYS	7 DAYS
Application Method	SPRAY	SPRAY	SPRAY
Application Placement	BROFOL	BROFOL	BROFOL
Applied By	SCS/VLI	SCS/VLI	SCS/VLI
Appl. Entry Date	Jun-3-2020	Jun-8-2020	Jun-16-2020
Air Temperature Start, Stop	18,7 24,6 C	15,3 15,8 C	20,9 23,1 C
% Relative Humidity Start, Stop	48 32	66 64	36 31
Wind Velocity+Dir. Start	2,8 MPS NW	3,6 MPS NW	2,3 MPS E
Wind Velocity+Dir. Stop	2,8 MPS NW	3,6 MPS NW	2,3 MPS E
Wet Leaves (Y/N)	N no	N no	N no
Soil Temperature	24,3 C	14,4 C	20,5 C
Soil Moisture	SLIDRY	NORMAL	SLIDRY
Soil Surface Condition	MEDIUM	MEDIUM	MEDIUM
% Cloud Cover	0	25	0

Crop Stage At Each Application						
	A		B		C	
Crop 1 Code, BBCH Scale	SOLTU	BPOT	SOLTU	BPOT	SOLTU	BPOT
Stage Majority, Percent	13	50	14	70	21	60
Stage Minimum, Percent	11	25	11	5	14	10
Stage Maximum, Percent	16	25	16	25	22	20
Crop Coverage (%)	5		10		30	

Pest Stage At Each Application						
	A		B		C	
Pest 1 Code, Type, Scale	POLAV	W BBCH	POLAV	W BBCH	POLAV	W BBCH
Stage Majority, Percent	14	80	14	80	30	100
Stage Minimum, Percent	12	10	12	10		
Stage Maximum, Percent	16	10	16	10		
Density Average	1	m2	1	m2	1	m2
Density Min, Max	0	1	0	1	0	1
Coverage	1	%	1	%	1	%
Pest 2 Code, Type, Scale	CAPBP	W BBCH	CAPBP	W BBCH	CAPBP	W BBCH
Stage Majority, Percent	14	80	16	60	16	100
Stage Minimum, Percent	12	10	14	40		
Stage Maximum, Percent	16	10	16	60		
Density Average	1	m2	1	m2	1	m2
Density Min, Max	0	1	0	1	0	1
Coverage	1	%	1	%	1	%
Pest 3 Code, Type, Scale	CHEAL	W BBCH	CHEAL	W BBCH	CHEAL	W BBCH
Stage Majority, Percent	10	90	12	90	30	100
Stage Minimum, Percent	10	5	12	90		
Stage Maximum, Percent	12	5	14	10		
Density Average	1	m2	1	m2	1	m2
Density Min, Max	0	1	0	1	0	1
Coverage	1	%	1	%	1	%
Pest 4 Code, Type, Scale	POAAN	W BBCH	POAAN	W BBCH	POAAN	W BBCH
Stage Majority, Percent	12	80	12	70	30	60
Stage Minimum, Percent	09	10	11	70	21	40
Stage Maximum, Percent	12	80	21	20	21	40
Density Average	1	m2	1	m2	1	m2
Density Min, Max	0	1	0	4	0	10
Coverage	1	%	1	%	1	%
Pest 5 Code, Type, Scale	POLCO	W BBCH	POLCO	W BBCH	POLCO	W BBCH
Stage Majority, Percent	11	95	11	70	30	100
Stage Minimum, Percent	09	5	10	10		
Stage Maximum, Percent	11	95	12	20		
Density Average	1	m2	1	m2	1	m2
Density Min, Max	0	1	0	1	0	1
Coverage	1	%	1	%	1	%
Pest 6 Code, Type, Scale	LAMPU	W BBCH	LAMPU	W BBCH	LAMPU	W BBCH
Stage Majority, Percent	12	90	12	90	14	60
Stage Minimum, Percent	09	10	10	10	12	20
Stage Maximum, Percent	12	90	12	90	30	20
Density Average	1	m2	1	m2	1	m2
Density Min, Max	0	1	0	1	0	1
Coverage	1	%	1	%	1	%

Application Equipment			
	A	B	C
Appl. Equipment	Sprayer A 15	Sprayer A 15	Sprayer A 15
Equipment Type	SPRAYE	SPRAYE	SPRAYE
Operation Pressure	2,6 BAR	2,6 BAR	2,6 BAR
Nozzle Type	DRIPED	DRIPED	DRIPED
Nozzle Size	LD015 110	LD015 110	LD015 110
Nozzle Spacing	50 cm	50 cm	50 cm
Nozzles/Row	5	5	5
Nozzle Filter Mesh	2,5	2,5	2,5
Spray Quality	10	10	10
% Coverage	100	100	100
Boom ID	V/1	V/1	V/1
Boom Length	2,5 m	2,5 m	2,5 m
Boom Height	50 cm	50 cm	50 cm
Ground Speed	4,5 KPH	4,5 KPH	4,5 KPH
Carrier	WATER	WATER	WATER
Minimum Mix/Treatment	1,35 L	1,35 L	1,35 L

SE Definitions	
	1.
Crop Type, Code	C

Aarhus University, Department of Agroecology, Flakkebjerg

Afrøvning af forskellige jordherbicider i forskellige lavdosis eller tankblandinger, efter fremspiring af kartofler.

Trial ID: 20175-01

Location: Flakkebjerg

Trial Year: 2020

Protocol ID: 20175

Investigator: Steen Sørensen

Project ID: 33971

Study Director:

Official Trial ID:

Sponsor Contact: Kartoffelafgift fond

Conducted Under GEP: Yes

Pest Code	C SOLTU		C SOLTU		C SOLTU		C SOLTU	
Crop Type, Code	C SOLTU		C SOLTU		C SOLTU		C SOLTU	
Rating Date	Jun-8-2020	Jun-8-2020	Jun-15-2020	Jun-15-2020	Jun-15-2020	Jun-22-2020	Jun-22-2020	Jun-22-2020
Part Rated	PLANT C	PLANT C	PLANT C	PLANT C	PLANT C	PLANT C	PLANT C	PLANT C
Rating Type	PHYBLE	PHYNEC	PHYBLE	PHYNEC	PHYVOR	PHYBLE	PHYNEC	PHYNEC
Rating Unit	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Number of Subsamples	1	1	1	1	1	1	1	1
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH
Crop Stage Majority	14	14	21	21	21	55	55	55
Trt-Eval Interval	6 DA-A	6 DA-A	13 DA-A	13 DA-A	13 DA-A	7 DA-C	7 DA-C	7 DA-C
Number of Decimals	0	0	0	0	0	0	0	0
Trt Treatment No. Name	Rate Appl Rate Unit Timing							
1 Untreated Check		0	0	0	0	0	0	0
2 Fenix Fenix	0,35 L/ha 0,35 L/ha	5 ab	2 bc	16 b	6 de	9 cd	14 c	8 cd
3 Fenix Fenix Fenix	0,35 L/ha 0,35 L/ha 0,35 L/ha	5 ab	2 bc	18 b	5 e	6 d	23 b	8 cd
4 Proman Proman	0,4 L/ha 0,4 L/ha	0 c	0 c	0 d	0 f	0 e	0 d	0 e
5 Proman Proman Proman	0,4 L/ha 0,4 L/ha 0,4 L/ha	0 c	0 c	1 d	0 f	0 e	0 d	0 e
6 Boxer Boxer	2,5 L/ha 2,5 L/ha	0 c	0 c	0 d	0 f	0 e	0 d	0 e
7 Boxer Boxer Boxer	2,5 L/ha 2,5 L/ha 2,5 L/ha	1 c	0 c	0 d	0 f	0 e	1 d	0 e
8 Centium Centium	0,1 L/ha 0,1 L/ha	3 bc	0 c	7 c	0 f	0 e	3 d	0 e
9 Centium Centium Centium	0,1 L/ha 0,1 L/ha 0,1 L/ha	3 ab	0 c	8 c	0 f	0 e	3 d	0 e
10 Fenix Boxer Fenix Boxer	0,25 L/ha 1,0 L/ha 0,25 L/ha 1,0 L/ha	5 ab	10 a	15 b	14 a	14 ab	5 d	10 bc
11 Fenix Boxer Fenix Boxer Fenix Boxer	0,25 L/ha 1,0 L/ha 0,25 L/ha 1,0 L/ha 0,25 L/ha 1,0 L/ha	5 ab	9 a	20 ab	10 bc	18 a	24 b	13 ab
12 Fenix Centium Fenix Centium	0,25 L/ha 0,08 L/ha 0,25 L/ha 0,08 L/ha	5 ab	4 bc	15 b	7 de	7 d	10 c	5 d
13 Fenix Centium Fenix Centium Fenix Centium	0,25 L/ha 0,08 L/ha 0,25 L/ha 0,08 L/ha 0,25 L/ha 0,08 L/ha	6 a	4 b	20 ab	9 cd	10 bcd	25 b	10 bc
14 Fenix Proman Fenix Proman	0,25 L/ha 0,25 L/ha 0,25 L/ha 0,25 L/ha	6 a	4 bc	25 a	13 ab	14 ab	13 c	5 d

Pest Code								
Crop Type, Code	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	
Rating Date	Jun-8-2020	Jun-8-2020	Jun-15-2020	Jun-15-2020	Jun-15-2020	Jun-22-2020	Jun-22-2020	
Part Rated	PLANT C	PLANT C	PLANT C	PLANT C	PLANT C	PLANT C	PLANT C	
Rating Type	PHYBLE	PHYNEC	PHYBLE	PHYNEC	PHYVOR	PHYBLE	PHYNEC	
Rating Unit	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	
Number of Subsamples	1	1	1	1	1	1	1	
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	
Crop Stage Majority	14	14	21	21	21	55	55	
Trt-Eval Interval	6 DA-A	6 DA-A	13 DA-A	13 DA-A	13 DA-A	7 DA-C	7 DA-C	
Number of Decimals	0	0	0	0	0	0	0	
Trt Treatment No. Name								
Rate Appl Rate Unit Timing								
15 Fenix Proman Fenix Proman Fenix Proman	0,25 L/ha 0,25 L/ha 0,25 L/ha 0,25 L/ha 0,25 L/ha	6 a	5 b	21 ab	11 abc	13 bc	30 a	14 a
LSD P=.05	1,9	2,3	4,7	2,3	3,5	3,9	2,5	
CV	38,27	58,38	27,94	30,49	37,96	25,63	34,06	
Replicate F	9,373	1,091	3,932	1,883	0,759	2,764	3,510	
Replicate Prob(F)	0,0001	0,3644	0,0152	0,1485	0,5238	0,0548	0,0240	
Treatment F	13,138	16,584	29,638	42,863	27,994	63,085	35,882	
Treatment Prob(F)	0,0001	0,0001	0,0001	0,0001	0,0001	0,0001	0,0001	

Pest Code	C SOLTU	TTTDD	TTTMM	C SOLTU	C SOLTU	C SOLTU	C SOLTU
Crop Type, Code	Jun-22-2020	C SOLTU	C SOLTU	Jun-22-2020	Jun-29-2020	Jun-29-2020	Jun-29-2020
Rating Date	Jun-22-2020	Jun-22-2020	Jun-22-2020	Jun-29-2020	Jun-29-2020	Jun-29-2020	Jul-13-2020
Part Rated	PLANT C	PLANT P	PLANT P	PLANT C	PLANT C	PLANT C	PLANT C
Rating Type	PHYVOR	EFFICI	EFFICI	PHYBLE	PHYNEC	PHYVOR	PHYBLE
Rating Unit	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Number of Subsamples	1	1	1	1	1	1	1
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH
Crop Stage Majority	55	55	55	65	65	65	68
Trt-Eval Interval	7 DA-C	7 DA-C	7 DA-C	14 DA-C	14 DA-C	14 DA-C	28 DA-C
Number of Decimals	0	0	0	0	0	0	0
Trt Treatment	Rate Appl						
No. Name	Rate Unit Timing						
1 Untreated Check		0	1	1	0	0	0
2 Fenix	0,35 L/ha	6 d	82 ab	74 -	11 c	5 c	6 cd
Fenix	0,35 L/ha						2 c
3 Fenix	0,35 L/ha	9 cd	90 ab	93 -	29 a	11 b	13 ab
Fenix	0,35 L/ha						5 ab
Fenix	0,35 L/ha						
4 Proman	0,4 L/ha	0 e	73 abc	75 -	0 d	0 d	1 d
Proman	0,4 L/ha						0 d
5 Proman	0,4 L/ha	0 e	94 a	90 -	0 d	0 d	1 d
Proman	0,4 L/ha						0 d
Proman	0,4 L/ha						
6 Boxer	2,5 L/ha	0 e	60 bc	81 -	0 d	0 d	0 d
Boxer	2,5 L/ha						0 d
7 Boxer	2,5 L/ha	0 e	71 abc	90 -	0 d	0 d	0 d
Boxer	2,5 L/ha						0 d
Boxer	2,5 L/ha						
8 Centium	0,1 L/ha	0 e	46 c	54 -	0 d	0 d	0 d
Centium	0,1 L/ha						0 d
9 Centium	0,1 L/ha	0 e	66 abc	75 -	0 d	0 d	0 d
Centium	0,1 L/ha						0 d
Centium	0,1 L/ha						
10 Fenix	0,25 L/ha	9 cd	92 ab	99 -	5 d	5 c	5 cd
Boxer	1,0 L/ha						1 d
Fenix	0,25 L/ha						
Boxer	1,0 L/ha						
11 Fenix	0,25 L/ha	16 a	97 a	91 -	16 b	10 b	18 a
Boxer	1,0 L/ha						4 b
Fenix	0,25 L/ha						
Boxer	1,0 L/ha						
Fenix	0,25 L/ha						
Boxer	1,0 L/ha						
12 Fenix	0,25 L/ha	6 d	86 ab	69 -	11 c	4 c	6 cd
Centium	0,08 L/ha						3 c
Fenix	0,25 L/ha						
Centium	0,08 L/ha						
13 Fenix	0,25 L/ha	11 bc	88 ab	74 -	26 a	10 b	13 ab
Centium	0,08 L/ha						5 ab
Fenix	0,25 L/ha						
Centium	0,08 L/ha						
Fenix	0,25 L/ha						
Centium	0,08 L/ha						
14 Fenix	0,25 L/ha	10 c	97 a	90 -	13 c	4 c	10 bc
Proman	0,25 L/ha						5 ab
Fenix	0,25 L/ha						
Proman	0,25 L/ha						

Means followed by same letter or symbol do not significantly differ ($P=0.05$, Student-Newman-Keuls).
 Untreated treatment(s) 1 excluded from analysis.

Pest Code Crop Type, Code Rating Date	C SOLTU Jun-22-2020	TTTDD C SOLTU Jun-22-2020	TTTMM C SOLTU Jun-22-2020	C SOLTU Jun-29-2020	C SOLTU Jun-29-2020	C SOLTU Jun-29-2020	C SOLTU Jul-13-2020
Part Rated Rating Type Rating Unit Sample Size Number of Subsamples Crop Stage Scale Crop Stage Majority Trt-Eval Interval Number of Decimals	PLANT C PHYVOR PERCENT 1 PLOT 1 BBCH 55 7 DA-C 0	PLANT P EFFICI PERCENT 1 PLOT 1 BBCH 55 7 DA-C 0	PLANT P EFFICI PERCENT 1 PLOT 1 BBCH 55 7 DA-C 0	PLANT C PHYBLE PERCENT 1 PLOT 1 BBCH 65 14 DA-C 0	PLANT C PHYNEC PERCENT 1 PLOT 1 BBCH 65 14 DA-C 0	PLANT C PHYVOR PERCENT 1 PLOT 1 BBCH 65 14 DA-C 0	PLANT C PHYBLE PERCENT 1 PLOT 1 BBCH 68 28 DA-C 0
Trt Treatment No. Name	Rate Appl Rate Unit Timing						
15 Fenix Proman Fenix Proman Fenix Proman	0,25 L/ha 0,25 L/ha 0,25 L/ha 0,25 L/ha 0,25 L/ha 0,25 L/ha	14 ab 98 a	98 -	25 a	15 a	18 a	6 a
LSD P=.05 CV	2,6 31,01	20,0 17,23	31,3 26,62	3,3 23,86	1,2 18,55	4,0 43,14	1,2 39,49
Replicate F Replicate Prob(F) Treatment F Treatment Prob(F)	0,505 0,6809 41,735 0,0001	2,051 0,1225 5,095 0,0001	0,947 0,4274 1,355 0,2252	0,524 0,6681 86,350 0,0001	0,892 0,4537 145,919 0,0001	1,083 0,3675 22,107 0,0001	2,176 0,1063 29,713 0,0001

Pest Code	C	C	C	
Crop Type, Code	SOLTU	SOLTU	SOLTU	
Rating Date	Jul-13-2020	Jul-13-2020	Jul-27-2020	
Part Rated	PLANT C	PLANT C	PLANT C	
Rating Type	PHYNEC	PHYVOR	PHYVOR	
Rating Unit	PERCENT	PERCENT	PERCENT	
Sample Size	1 PLOT	1 PLOT	1 PLOT	
Number of Subsamples	1	1	1	
Crop Stage Scale	BBCH	BBCH	BBCH	
Crop Stage Majority	68	68	69	
Trt-Eval Interval	28 DA-C	28 DA-C	42 DA-C	
Number of Decimals	0	0	0	
Trt No.	Treatment Name	Rate	Appl Unit	Timing
1	Untreated Check	0		
2	Fenix Fenix	0,35 L/ha 0,35 L/ha		0 b 1 c 1 b
3	Fenix Fenix Fenix	0,35 L/ha 0,35 L/ha 0,35 L/ha		3 a 9 ab 8 a
4	Proman Proman	0,4 L/ha 0,4 L/ha		0 b 0 c 1 b
5	Proman Proman Proman	0,4 L/ha 0,4 L/ha 0,4 L/ha		0 b 0 c 3 ab
6	Boxer Boxer	2,5 L/ha 2,5 L/ha		0 b 0 c 0 b
7	Boxer Boxer Boxer	2,5 L/ha 2,5 L/ha 2,5 L/ha		0 b 0 c 1 b
8	Centium Centium	0,1 L/ha 0,1 L/ha		0 b 0 c 0 b
9	Centium Centium Centium	0,1 L/ha 0,1 L/ha 0,1 L/ha		0 b 0 c 0 b
10	Fenix Boxer Fenix Boxer	0,25 L/ha 1,0 L/ha 0,25 L/ha 1,0 L/ha		0 b 0 c 0 b
11	Fenix Boxer Fenix Boxer Fenix Boxer	0,25 L/ha 1,0 L/ha 0,25 L/ha 1,0 L/ha 0,25 L/ha 1,0 L/ha		2 ab 10 ab 8 a
12	Fenix Centium Fenix Centium	0,25 L/ha 0,08 L/ha 0,25 L/ha 0,08 L/ha		0 b 3 c 3 ab
13	Fenix Centium Fenix Centium Fenix Centium	0,25 L/ha 0,08 L/ha 0,25 L/ha 0,08 L/ha 0,25 L/ha 0,08 L/ha		3 a 10 ab 8 a
14	Fenix Proman Fenix Proman	0,25 L/ha 0,25 L/ha 0,25 L/ha 0,25 L/ha		2 ab 6 bc 0 b

Pest Code	C SOLTU	C SOLTU	C SOLTU
Crop Type, Code	Jul-13-2020	Jul-13-2020	Jul-27-2020
Rating Date			
Part Rated	PLANT C	PLANT C	PLANT C
Rating Type	PHYNEC	PHYVOR	PHYVOR
Rating Unit	PERCENT	PERCENT	PERCENT
Sample Size	1 PLOT	1 PLOT	1 PLOT
Number of Subsamples	1	1	1
Crop Stage Scale	BBCH	BBCH	BBCH
Crop Stage Majority	68	68	69
Trt-Eval Interval	28 DA-C	28 DA-C	42 DA-C
Number of Decimals	0	0	0
Trt Treatment	Rate Appl		
No. Name	Rate Unit Timing		
15 Fenix	0,25 L/ha	3 a	14 a
Proman	0,25 L/ha		7 a
Fenix	0,25 L/ha		
Proman	0,25 L/ha		
Fenix	0,25 L/ha		
Proman	0,25 L/ha		
LSD P=.05	1,2	4,8	3,6
CV	97,12	88,95	91,1
Replicate F	1,174	0,481	2,614
Replicate Prob(F)	0,3322	0,6971	0,0648
Treatment F	8,950	8,728	6,502
Treatment Prob(F)	0,0001	0,0001	0,0001

Aarhus University, Department of Agroecology, Flakkebjerg
 Afprøvning af forskellige jordherbicider i forskellige lavdosis eller tankblandinger, efter fremspiring af kartofler.
 Trial ID: 20175-01 Location: Flakkebjerg Trial Year: 2020
 Protocol ID: 20175 Investigator: Steen Sørensen
 Project ID: 33971 Study Director:
 Official Trial ID: Sponsor Contact: Kartoffelafgift fond
 Conducted Under GEP: Yes

Pest Code

TTTDD, Dicotyledonous weed plants, Dicotyledonous weeds = US

TTTMM, Monocotyledonous weed plants, Monocotyledonous weeds = US

Crop Type, Code

C = EPPO species (Bayer) codes

SOLTU, BPOT, Solanum tuberosum, Potato = US

Part Rated

PLANT = Plant

C = Crop is Part Rated

P = Pest is Part Rated

Rating Type

PHYBLE = phytotoxicity - bleaching

PHYNEC = phytotoxicity - necrosis /burn

PHYVOR = phytotoxicity - volume reduction

EFFICI = efficiency

Rating Unit

PERCENT = 0-100 percent

PLOT = total plot

Crop Stage Scale

BBCH = BBCH uniform plant stages

Crop Stage Majority

14 = 4th leaf of main stem unfolded (>4 cm)

21 = 1st basal side shoot visible (> 5 cm)

55 = Buds of first inflorescence extended to 5 mm

65 = Full flowering: 50% of flowers in the first inflorescence open

68 = 80% of flowers in the first inflorescence open

69 = End of flowering in the first inflorescence

Aarhus University, Department of Agroecology, Flakkebjerg

Afpøvning af forskellige jordherbicider i forskellige lavdosis eller tankblandinger, efter fremspiring af kartofler.

Trial ID: 20175-01

Location: Flakkebjerg

Trial Year: 2020

Protocol ID: 20175

Investigator: Steen Sørensen

Project ID: 33971

Study Director:

Official Trial ID:

Sponsor Contact: Kartoffelafgift fond

Conducted Under GEP: Yes

Trt No.	Treatment Name	Rate	Appl Unit	Timing			
1	Untreated Check				115,3 ab	22,3 -	11418 ab
2	Fenix Fenix	0,35 L/ha 0,35 L/ha			102,2 bc	21,5 -	9847 a-d
3	Fenix Fenix Fenix	0,35 L/ha 0,35 L/ha 0,35 L/ha			93,7 c	20,8 -	8559 d
4	Proman Proman	0,4 L/ha 0,4 L/ha			107,1 abc	22,0 -	10699 abc
5	Proman Proman Proman	0,4 L/ha 0,4 L/ha 0,4 L/ha			106,6 abc	21,7 -	10276 a-d
6	Boxer Boxer	2,5 L/ha 2,5 L/ha			111,7 abc	22,3 -	11062 abc
7	Boxer Boxer Boxer	2,5 L/ha 2,5 L/ha 2,5 L/ha			121,3 a	21,6 -	11974 a
8	Centium Centium	0,1 L/ha 0,1 L/ha			116,2 ab	21,5 -	11111 abc
9	Centium Centium Centium	0,1 L/ha 0,1 L/ha 0,1 L/ha			115,7 ab	22,1 -	11338 abc
10	Fenix Boxer Fenix Boxer	0,25 L/ha 1,0 L/ha 0,25 L/ha 1,0 L/ha			108,4 abc	22,0 -	10714 abc
11	Fenix Boxer Fenix Boxer Fenix Boxer	0,25 L/ha 1,0 L/ha 0,25 L/ha 1,0 L/ha 0,25 L/ha 1,0 L/ha			95,3 c	21,6 -	9184 cd
12	Fenix Centium Fenix Centium	0,25 L/ha 0,08 L/ha 0,25 L/ha 0,08 L/ha			107,5 abc	22,1 -	10451 a-d
13	Fenix Centium Fenix Centium Fenix Centium	0,25 L/ha 0,08 L/ha 0,25 L/ha 0,08 L/ha 0,25 L/ha 0,08 L/ha			94,9 c	22,3 -	9519 bcd
14	Fenix Proman Fenix Proman	0,25 L/ha 0,25 L/ha 0,25 L/ha 0,25 L/ha			107,5 abc	21,5 -	10294 a-d

Pest Code				
Crop Type, Code	C SOLTU	C SOLTU	C SOLTU	
Rating Date	Oct-2-2020	Oct-2-2020	Oct-2-2020	
Part Rated	TUBER C	TUBER C	TUBER C	
Rating Type	YIELD	STACON	STACON	
Rating Unit	kg	percent	kg/ha	
Sample Size	22,5 m ²			
Number of Subsamples	1	1	1	
Crop Stage Scale	BBCH	BBCH	BBCH	
Crop Stage Majority	99	99	99	
Trt-Eval Interval	122 DA-A	122 DA-A	122 DA-A	
Number of Decimals	1	1	0	
Trt Treatment				
No. Name	Rate Appl			
	Rate Unit Timing			
15 Fenix	0,25 L/ha	101,6 bc	22,3 -	10058 a-d
Proman	0,25 L/ha			
Fenix	0,25 L/ha			
Proman	0,25 L/ha			
Fenix	0,25 L/ha			
Proman	0,25 L/ha			
LSD P=.05	9,77	1,05	1152,9	
CV	6,33	3,37	7,65	
Replicate F	11,628	2,713	10,056	
Replicate Prob(F)	0,0001	0,0569	0,0001	
Treatment F	4,858	1,340	3,938	
Treatment Prob(F)	0,0001	0,2256	0,0005	

Crop Type, Code

C = EPPO species (Bayer) codes

SOLTU, BPOT, Solanum tuberosum, Potato = US

Part Rated

TUBER = tuber

C = Crop is Part Rated

Rating Type

YIELD = yield

STACON = starch content

Rating Unit

kg = kilogram

percent = 0-100 percent

kg/ha = kilograms per hectare

m² = square meterCrop Stage Scale

BBCH = BBCH uniform plant stages

Crop Stage Majority

99 = Harvested product

Afprøvning af forskellige jordherbicider i forskellige lavdosis eller tankblandinger, efter fremspring af kartofler.

Trial ID: 20175-01 Location: Flakkebjerg Trial Year: 2020
 Protocol ID: 20175 Investigator: Steen Sørensen
 Project ID: 33971 Study Director:
 Official Trial ID: Sponsor Contact: Kartoffelafgift fond
 Conducted Under GEP: Yes

Pest Type	C SOLTU		C SOLTU		C SOLTU		C SOLTU		C SOLTU		C SOLTU		C SOLTU		C SOLTU		C SOLTU		W Weed		W Weed		C SOLTU		C SOLTU					
Pest Code	BPOP		BPOP		BPOP		BPOP		BPOP		BPOP		BPOP		BPOP		BPOP		TTTDD		TTTMM		BPOP		BPOP					
Pest Scientific Name	Solanum tuberosum		Solanum tuberosum		Solanum tuberosum		Solanum tuberosum		Solanum tuberosum		Solanum tuberosum		Solanum tuberosum		Solanum tuberosum		Solanum tuberosum		Dicotyledonous weed plants		Dicotyledonous weed plants		Monocotyledonous weed plants		Monocotyledonous weed plants					
Pest Name	Potato		Potato		Potato		Potato		Potato		Potato		Potato		Potato		Potato		Dicotyledonous weeds		Dicotyledonous weeds		Monocotyledonous weeds		Monocotyledonous weeds					
Crop Type, Code	Jun-8-2020		Jun-8-2020		Jun-15-2020		Jun-15-2020		Jun-22-2020		Jun-22-2020		Jun-22-2020		Jun-22-2020		Jun-22-2020		Jun-22-2020		Jun-22-2020		Jun-29-2020		Jun-29-2020					
BBCH Scale	1		2		3		4		5		6		7		8		9		10		11		12		13					
Crop Scientific Name	PLANT C		PLANT C		PLANT C		PLANT C		PLANT C		PLANT C		PLANT C		PLANT C		PLANT C		PLANT P		PLANT P		PLANT C		PLANT C					
Crop Name	PHYBLE		PHYNEC		PHYBLE		PHYNEC		PHYVOR		PHYBLE		PHYNEC		PHYVOR		PHYBLE		EFFICI		EFFICI		PHYBLE		PHYNEC					
Rating Date	PERCENT		PERCENT		PERCENT		PERCENT		PERCENT		PERCENT		PERCENT		PERCENT		PERCENT		PERCENT		PERCENT		PERCENT		PERCENT					
Rating Type	1 PLOT		1 PLOT		1 PLOT		1 PLOT		1 PLOT		1 PLOT		1 PLOT		1 PLOT		1 PLOT		1 PLOT		1 PLOT		1 PLOT		1 PLOT					
SE Group No.	1		2		3		4		5		6		7		8		9		10		11		12		13					
Part Rated	BBCH		BBCH		BBCH		BBCH		BBCH		BBCH		BBCH		BBCH		BBCH		BBCH		BBCH		BBCH		BBCH					
Rating Unit	14		14		21		21		21		55		55		55		55		55		55		65		65					
Sample Size	1		1		1		1		1		1		1		1		1		1		1		1		1					
Number of Subsamples	1		1		1		1		1		1		1		1		1		1		1		1		1					
Crop Stage Scale	1		1		2		2		2		3		3		3		3		3		3		4		4					
Crop Stage Majority	SCS/VLI		SCS/VLI		SCS/VLI		SCS/VLI		SCS/VLI		SCS/VLI		SCS/VLI		SCS/VLI		SCS/VLI		SCS/VLI		SCS/VLI		SCS/VLI		SCS/VLI					
Footnote Number	Jun-8-2020		Jun-8-2020		Jun-16-2020		Jun-16-2020		Jun-22-2020		Jun-22-2020		Jun-22-2020		Jun-22-2020		Jun-22-2020		Jun-22-2020		Jun-22-2020		Jun-29-2020		Jun-29-2020					
Assessed By	6 6		6 6		13 7		13 7		20 7		20 7		20 7		20 7		20 7		20 7		20 7		27 14		27 14					
Data Entry Date	6 DA-A		6 DA-A		13 DA-A		13 DA-A		7 DA-C		7 DA-C		7 DA-C		7 DA-C		7 DA-C		7 DA-C		7 DA-C		14 DA-C		14 DA-C					
Days After First/Last Applic.	6 DA-A		6 DA-A		13 DA-A		13 DA-A		7 DA-C		7 DA-C		7 DA-C		7 DA-C		7 DA-C		7 DA-C		7 DA-C		14 DA-C		14 DA-C					
Trt-Eval Interval	6 DA-A		6 DA-A		13 DA-A		13 DA-A		7 DA-C		7 DA-C		7 DA-C		7 DA-C		7 DA-C		7 DA-C		7 DA-C		14 DA-C		14 DA-C					
ARM Action Codes	6 DA-A		6 DA-A		13 DA-A		13 DA-A		7 DA-C		7 DA-C		7 DA-C		7 DA-C		7 DA-C		7 DA-C		7 DA-C		14 DA-C		14 DA-C					
Number of Decimals	0		0		0		0		0		0		0		0		0		0		0		0		0					
Trt Treatment	Rate Appl		Rate Appl		Rate Appl		Rate Appl		Rate Appl		Rate Appl		Rate Appl		Rate Appl		Rate Appl		Rate Appl		Rate Appl		Rate Appl		Rate Appl		Rate Appl			
No. Name	Rate Unit Timing Plot		Rate Unit Timing Plot		Rate Unit Timing Plot		Rate Unit Timing Plot		Rate Unit Timing Plot		Rate Unit Timing Plot		Rate Unit Timing Plot		Rate Unit Timing Plot		Rate Unit Timing Plot		Rate Unit Timing Plot		Rate Unit Timing Plot		Rate Unit Timing Plot		Rate Unit Timing Plot		Rate Unit Timing Plot		Rate Unit Timing Plot	
1 Untreated Check	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0		
	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0		
	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0		
	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0		
	Mean =	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0		
2 Fenix	0,35 L/ha	2	5	0	25	5	10	15	5	5	85	90	15	5																
Fenix	0,35 L/ha	28	5	15	10	5	15	10	5	85	95	10	5																	
		44	3	5	10	5	15	10	5	60	30	10	5																	
		52	5	3	15	5	10	5	10	98	80	10	5																	
	Mean =	5	2	16	6	9	14	8	6	82	74	11	5																	
3 Fenix	0,35 L/ha	1	5	0	20	5	10	25	5	10	80	95	30	10																
Fenix	0,35 L/ha	16	5	3	15	5	5	25	5	95	98	30	10																	
Fenix	0,35 L/ha	42	3	5	15	5	5	15	10	95	80	25	10																	
		59	5	0	20	5	5	25	10	90	100	30	15																	
	Mean =	5	2	18	5	6	23	8	9	90	93	29	11																	
4 Proman	0,4 L/ha	8	0	0	0	0	0	0	0	90	30	0	0																	
Proman	0,4 L/ha	26	0	0	0	0	0	0	0	90	80	0	0																	
		31	0	0	0	0	0	0	0	40	100	0	0																	
		58	0	0	0	0	0	0	0	70	90	0	0																	
	Mean =	0	0	0	0	0	0	0	0	73	75	0	0																	
5 Proman	0,4 L/ha	12	0	0	0	0	0	0	0	85	90	0	0																	
Proman	0,4 L/ha	17	0	0	0	0	0	0	0	95	95	0	0																	
Proman	0,4 L/ha	35	0	0	0	0	0	0	0	95	80	0	0																	
		51	0	0	3	0	0	0	0	99	95	0	0																	
	Mean =	0	0	1	0	0	0	0	0	94	90	0	0																	
6 Boxer	2,5 L/ha	3	0	0	0	0	0	0	0	60	95	0	0																	
Boxer	2,5 L/ha	21	0	0	0	0	0	0	0	80	70	0	0																	
		33	0	0	0	0	0	0	0	50	100	0	0																	
		55	0	0	0	0	0	0	0	50	60	0	0																	
	Mean =	0	0	0	0	0	0	0	0	60	81	0	0																	
7 Boxer	2,5 L/ha	13	0	0	0	0	0	0	0	80	100	0	0																	
Boxer	2,5 L/ha	27	3	0	2	0	2	0	0	75	80	0	0																	
Boxer	2,5 L/ha	32	0	0	0	0	0	0	0	40	100	0	0																	
		56	0	0	0	0	0	0	0	90	80	0	0																	
	Mean =	1	0	0	0	0	1	0	0	71	90	0	0																	
8 Centium	0,1 L/ha	14	5	0	5	0	0	2	0	75	90	0	0																	
Centium	0,1 L/ha	23	5	0	10	0	0	5	0	50	20	0	0																	
		36	0	0	7	0	0	2	0	30	20	0	0																	
		53	0	0	5	0	0	2	0	30	85	0	0																	
	Mean =	3	0	7	0	0	3	0	0	46	54	0	0																	
9 Centium	0,1 L/ha	15	5	0	7	0	0	2	0	80	95	0	0																	
Centium	0,1 L/ha	25	5	0	10	0	0	3	0	60	40	0	0																	
Centium	0,1 L/ha	34	0	0	5	0	0	3	0	50	75	0	0																	
		48	3	0	10	0	0	2	0	75	90	0	0																	
	Mean =	3	0	8	0	0	3	0	0	66	75	0	0																	

Pest Type	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	W Weed	W Weed	C SOLTU	C SOLTU
Pest Code										TTTDD	TTTMM		
Pest Scientific Name										Dicotyledonous weed plants	Monocotyledonous weed plants		
Pest Name										Dicotyledonous weeds	Monocotyledonous weeds		
Crop Type, Code	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU
BBCH Scale	BPOT	BPOT	BPOT	BPOT	BPOT	BPOT	BPOT	BPOT	BPOT	BPOT	BPOT	BPOT	BPOT
Crop Scientific Name	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum
Crop Name	Potato	Potato	Potato	Potato	Potato	Potato	Potato	Potato	Potato	Potato	Potato	Potato	Potato
Rating Date	Jun-8-2020	Jun-8-2020	Jun-15-2020	Jun-15-2020	Jun-15-2020	Jun-22-2020	Jun-22-2020	Jun-22-2020	Jun-22-2020	Jun-22-2020	Jun-22-2020	Jun-29-2020	Jun-29-2020
SE Group No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Pest Rated	PLANT C	PLANT C	PLANT C	PLANT C	PLANT C	PLANT C	PLANT C	PLANT C	PLANT C	PLANT P	PLANT P	PLANT C	PLANT C
Rating Type	PHYBLE	PHYNEC	PHYBLE	PHYNEC	PHYVOR	PHYBLE	PHYNEC	PHYVOR	PHYNEC	EFFICI	EFFICI	PHYBLE	PHYNEC
Rating Unit	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Number of Subsamples	1	1	1	1	1	1	1	1	1	1	1	1	1
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH
Crop Stage Majority	14	14	21	21	21	55	55	55	55	55	55	65	65
Footnote Number	1	1	2	2	2	3	3	3	3	3	3	4	4
Assessed By	SCS/VLI	SCS/VLI	SCS/VLI	SCS/VLI	SCS/VLI	SCS/VLI	SCS/VLI	SCS/VLI	SCS/VLI	SCS/VLI	SCS/VLI	SCS/VLI	SCS/VLI
Data Entry Date	Jun-8-2020	Jun-8-2020	Jun-16-2020	Jun-16-2020	Jun-16-2020	Jun-22-2020	Jun-22-2020	Jun-22-2020	Jun-22-2020	Jun-22-2020	Jun-22-2020	Jun-29-2020	Jun-29-2020
Days After First/Last Applic.	6 6	6 6	13 7	13 7	13 7	20 7	20 7	20 7	20 7	20 7	20 7	27 14	27 14
Trt-Eval Interval	6 DA-A	6 DA-A	13 DA-A	13 DA-A	13 DA-A	7 DA-C	7 DA-C	7 DA-C	7 DA-C	7 DA-C	7 DA-C	14 DA-C	14 DA-C
ARM Action Codes													
Number of Decimals	0	0	0	0	0	0	0	0	0	0	0	0	0
Trt Treatment Rate Appl													
No. Name	Rate	Unit	Timing	Plot									
10 Fenix	0,25 L/ha	11			5	10	15	10	10	5	5	99	99
Boxer	1,0 L/ha	29			5	10	20	15	15	5	10	80	95
Fenix	0,25 L/ha	38			3	10	15	10	15	5	10	90	100
Boxer	1,0 L/ha	47			5	10	15	15	15	5	10	99	100
Mean =					5	10	15	14	14	5	10	92	99
11 Fenix	0,25 L/ha	6			5	10	25	10	20	10	20	98	75
Boxer	1,0 L/ha	22			5	10	20	10	15	15	15	95	90
Fenix	0,25 L/ha	37			3	5	20	10	20	15	15	98	98
Boxer	1,0 L/ha	46			5	10	15	10	15	15	15	95	100
Fenix	0,25 L/ha												20
Boxer	1,0 L/ha												
Mean =					5	9	20	10	18	24	13	16	97
12 Fenix	0,25 L/ha	10			5	5	10	5	5	3	5	95	20
Centium	0,08 L/ha	24			5	5	10	10	10	5	10	90	70
Fenix	0,25 L/ha	43			5	5	10	5	7	5	5	98	85
Centium	0,08 L/ha	60			5	0	20	7	5	5	5	60	100
Mean =					5	4	15	7	7	10	5	86	69
13 Fenix	0,25 L/ha	4			5	5	25	10	25	10	15	95	75
Centium	0,08 L/ha	30			10	3	20	10	30	10	10	60	80
Fenix	0,25 L/ha	41			5	5	15	5	10	10	10	98	50
Centium	0,08 L/ha	57			5	3	20	10	25	10	10	98	90
Fenix	0,25 L/ha												25
Centium	0,08 L/ha												
Mean =					6	4	20	9	10	25	10	11	88
14 Fenix	0,25 L/ha	7			5	3	30	15	10	15	10	98	60
Proman	0,25 L/ha	20			10	5	30	15	15	5	10	100	100
Fenix	0,25 L/ha	40			5	3	20	10	10	5	10	95	98
Proman	0,25 L/ha	50			5	3	20	10	20	5	10	95	100
Mean =					6	4	25	13	14	13	10	97	90
15 Fenix	0,25 L/ha	9			5	3	25	15	10	10	15	98	90
Proman	0,25 L/ha	18			10	10	20	15	30	15	15	98	100
Fenix	0,25 L/ha	39			5	5	20	10	10	15	15	98	100
Proman	0,25 L/ha	49			5	3	20	10	15	15	10	99	100
Fenix	0,25 L/ha												25
Proman	0,25 L/ha												30
Mean =					6	5	21	11	13	30	14	14	98

Pest Type	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	C SOLTU	
Pest Code									
Pest Scientific Name	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	
Pest Name	Potato	Potato	Potato	Potato	Potato	Potato	Potato	Potato	
Crop Type, Code									
BBCH Scale	Jun-29-2020	Jul-13-2020	Jul-13-2020	Jul-13-2020	Jul-27-2020	Oct-2-2020	Oct-2-2020	Oct-2-2020	
Crop Scientific Name									
Crop Name									
Rating Date	13	14	15	16	17	20	21	23	
SE Group No.	PLANT C	PLANT C	PLANT C	PLANT C	PLANT C	TUBER C	TUBER C	TUBER C	
Part Rated									
Rating Type	PHYVOR	PHYBLE	PHYNEC	PHYVOR	PHYVOR	YIELD	STACON	STACON	
Rating Unit	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	kg	percent	kg/ha	
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	22,5 m ²			
Number of Subsamples						1	1	1	
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	
Crop Stage Majority	65	68	68	68	69	99	99	99	
Footnote Number	4	5	5	5	6	7	8	8	
Assessed By	SCS/VLI	VLI	VLI	VLI	SCS/VLI	VLI	VLI	VLI	
Data Entry Date	Jun-29-2020	Jul-13-2020	Jul-13-2020	Jul-13-2020	Jul-28-2020	Oct-30-2020	Nov-2-2020		
Days After First/Last Applic.	27 14	41 28	41 28	41 28	55 42	122 109	122 109	122 109	
Trt-Eval Interval	14 DA-C	28 DA-C	28 DA-C	28 DA-C	42 DA-C	122 DA-A	122 DA-A	122 DA-A	
ARM Action Codes								T1	
Number of Decimals	0	0	0	0	0	1	1	0	
Trt Treatment	Rate Appl								
No. Name	Rate Unit Timing Plot								
1 Untreated Check	5 19 45 54 Mean =	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	115,5 121,7 107,3 116,6 115,3	22,4 22,6 21,7 22,5 22,3	11473 12235 10325 11639 11418
2 Fenix	0,35 L/ha 2 28 44 52 Mean =	10 5 0 10 6	0 3 3 3 2	0 0 0 0 0	0 0 0 5 1	0 0 0 5 1	95,3 102,8 108,4 102,2	20,9 22,6 21,1 21,5 21,5	. 9581 9627 10334 9847
3 Fenix	0,35 L/ha 1 16 42 59 Mean =	10 15 10 15 13	5 5 5 3 5	0 2 5 3 3	0 10 15 10 9	0 10 10 10 8	105,0 82,3 109,9 109,9 93,7	21,3 21,1 19,9 20,9 20,8	. 9828 7290 . 8559
4 Proman	0,4 L/ha 8 26 31 58 Mean =	5 0 0 0 1	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 5 0 0 1	105,7 105,6 109,9 107,1	21,6 23,0 20,6 22,8 22,0	10161 10804 . 11132 10699
5 Proman	0,4 L/ha 12 17 35 51 Mean =	0 0 0 5 1	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 5 5 3	119,8 117,5 96,0 93,2 106,6	22,4 21,3 22,0 20,8 21,7	11948 11144 9395 8616 10276
6 Boxer	2,5 L/ha 3 21 33 55 Mean =	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	103,9 115,5 106,7 120,8 111,7	22,0 22,3 22,8 22,1 22,3	10136 11447 10798 11865 11062
7 Boxer	2,5 L/ha 13 27 32 56 Mean =	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 5 1	122,9 117,9 119,9 123,2 121,3	21,6 22,2 19,9 22,8 21,6	11804 11638 . 12479 11974
8 Centium	0,1 L/ha 14 23 36 53 Mean =	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	128,5 113,3 105,6 117,3 116,2	22,0 20,5 22,1 21,4 21,5	12576 10318 10372 11177 11111
9 Centium	0,1 L/ha 15 25 34 48 Mean =	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	119,7 120,1 98,0 124,9 115,7	22,3 22,1 22,1 21,8 22,1	11848 11813 9617 12074 11338

Pest Type	C SOLTU BPOT	C SOLTU BPOT	C SOLTU BPOT	C SOLTU BPOT	C SOLTU BPOT	C SOLTU BPOT	C SOLTU BPOT	C SOLTU BPOT	C SOLTU BPOT		
Pest Code											
Pest Scientific Name											
Pest Name											
Crop Type, Code	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum	Solanum tuberosum		
BBCH Scale	BPOT	BPOT	BPOT	BPOT	BPOT	BPOT	BPOT	BPOT	BPOT		
Crop Scientific Name	Potato	Potato	Potato	Potato	Potato	Potato	Potato	Potato	Potato		
Crop Name											
Rating Date	Jun-29-2020	Jul-13-2020	Jul-13-2020	Jul-13-2020	Jul-27-2020	Oct-2-2020	Oct-2-2020	Oct-2-2020	Oct-2-2020		
SE Group No.	13	14	15	16	17	20	21	23	23		
Part Rated	PLANT C	PLANT C	PLANT C	PLANT C	PLANT C	TUBER C	TUBER C	TUBER C	TUBER C		
Rating Type	PHYVOR	PHYBLE	PHYNEC	PHYVOR	PHYVOR	YIELD	STACON	STACON	STACON		
Rating Unit	PERCENT	PERCENT	PERCENT	PERCENT	PERCENT	kg	percent	percent	kg/ha		
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	22,5 m ²					
Number of Subsamples	1	1	1	1	1	1	1	1	1		
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH	BBCH		
Crop Stage Majority	65	68	68	68	69	99	99	99	99		
Footnote Number	4	5	5	5	6	7	8	8	8		
Assessed By	SCS/VLI	VLI	VLI	VLI	SCS/VLI	VLI	VLI	VLI	VLI		
Data Entry Date	Jun-29-2020	Jul-13-2020	Jul-13-2020	Jul-13-2020	Jul-28-2020	Oct-30-2020	Nov-2-2020				
Days After First/Last Applic.	27 14	41 28	41 28	41 28	55 42	122 109	122 109	122 109	122 109		
Trt-Eval Interval	14 DA-C	28 DA-C	28 DA-C	28 DA-C	42 DA-C	122 DA-A	122 DA-A	122 DA-A	122 DA-A		
ARM Action Codes									T1		
Number of Decimals	0	0	0	0	0	1	1	1	0		
Trt Treatment Rate Appl											
No. Name	Rate	Unit	Timing	Plot							
10 Fenix	0,25	L/ha	11	5	0	0	0	114,4	23,4	11908	
Boxer	1,0	L/ha	29	5	3	0	0		21,3	.	
Fenix	0,25	L/ha	38	5	0	0	0	96,2	22,0	9393	
Boxer	1,0	L/ha	47	5	0	0	0	114,5	21,3	10839	
			Mean =	5	1	0	0	108,4	22,0	10714	
11 Fenix	0,25	L/ha	6	20	5	2	15	97,5	22,4	9685	
Boxer	1,0	L/ha	22	15	5	2	10	107,4	22,1	10559	
Fenix	0,25	L/ha	37	20	3	0	15	77,4	20,7	7131	
Boxer	1,0	L/ha	46	15	3	3	0	98,8	21,3	9362	
Fenix	0,25	L/ha									
Boxer	1,0	L/ha									
			Mean =	18	4	2	10	95,3	21,6	9184	
12 Fenix	0,25	L/ha	10	5	0	0	0	112,6	22,2	11110	
Centium	0,08	L/ha	24	10	3	0	5	108,2	21,7	10435	
Fenix	0,25	L/ha	43	0	3	0	0	101,6	21,7	9808	
Centium	0,08	L/ha	60	10	5	0	5	10	22,7	.	
			Mean =	6	3	0	3	107,5	22,1	10451	
13 Fenix	0,25	L/ha	4	10	5	2	10	5	100,3	22,4	
Centium	0,08	L/ha	30	10	5	3	10	5	21,8	.	
Fenix	0,25	L/ha	41	15	5	3	10	10	80,8	21,9	
Centium	0,08	L/ha	57	15	5	2	10	10	103,6	23,2	
Fenix	0,25	L/ha									
Centium	0,08	L/ha									
			Mean =	13	5	3	10	8	94,9	22,3	9519
14 Fenix	0,25	L/ha	7	10	5	2	10	0	116,5	22,7	
Proman	0,25	L/ha	20	10	5	2	10	0	108,9	21,7	
Fenix	0,25	L/ha	40	10	5	0	0	0	102,4	20,8	
Proman	0,25	L/ha	50	10	5	3	5	0	102,2	20,8	
			Mean =	10	5	2	6	0	107,5	21,5	10294
15 Fenix	0,25	L/ha	9	10	5	2	10	5	100,8	23,3	
Proman	0,25	L/ha	18	20	7	3	20	10	104,3	22,5	
Fenix	0,25	L/ha	39	20	5	3	10	7	98,1	22,3	
Proman	0,25	L/ha	49	20	7	5	15	7	103,1	21,1	
Fenix	0,25	L/ha									
Proman	0,25	L/ha									
			Mean =	18	6	3	14	7	101,6	22,3	10058

Afprøvning af forskellige jordherbicider i forskellige lavdosis eller tankblandinger, efter fremsprøjt af kartofler.

Trial ID: 20175-01 Location: Flakkebjerg Trial Year: 2020
 Protocol ID: 20175 Investigator: Steen Sørensen
 Project ID: 33971 Study Director:
 Official Trial ID: Sponsor Contact: Kartoffelafgift fond
 Conducted Under GEP: Yes

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

TTTDD, Dicotyledonous weed plants, Dicotyledonous weeds = US

TTTMM, Monocotyledonous weed plants, Monocotyledonous weeds = US

Crop Type Code

C = EPPO species (Bayer) codes

SOLTU, BPOT, Solanum tuberosum, Potato = US

Part Rated

PLANT = Plant

TUBER = tuber

C = Crop is Part Rated

P = Pest is Part Rated

Rating Type

PHYBLE = phytotoxicity - bleaching

PHYNEC = phytotoxicity - necrosis / burn

PHYVOR = phytotoxicity - volume reduction

EFFICI = efficiency

YIELD = yield

STACON = starch content

Rating Unit

PERCENT = 0-100 percent

kg = kilogram

kg/ha = kilograms per hectare

PLOT = total plot

m2 = square meter

Crop Stage Scale

BBCH = BBCH uniform plant stages

Crop Stage Majority

14 = 4th leaf of main stem unfolded (>4 cm)

21 = 1st basal side shoot visible (> 5 cm)

55 = Buds of first inflorescence extended to 5 mm

65 = Full flowering: 50% of flowers in the first inflorescence open

68 = 80% of flowers in the first inflorescence open

69 = End of flowering in the first inflorescence

99 = Harvested product

Assessed By

SCS/VLI = Steen C. Sørensen/Verner Lindberg

VLI = Verner Lindberg

Footnote 1: Den 8. juni 2020: Steen og Verner

Footnote 2: Den 15. juni 2020: 1 parcel 1, 7, 9, 18, 42, 47, 49, 51, 52, 54 og 57 mangler der 1 til 5 planter. 1 parcel 8 og 60 mangler der 6 til 10 planter. 1 parcel 6 mangler der 11 til 15 planter. Der er blomsterknopper i nogle af planterne. Steen og Verner

Footnote 3: Den 22. juni 2020: 1 parcel 1, 7, 9, 18, 42, 47, 49, 51, 52, 54 og 57 mangler der 1 til 5 planter. 1 parcel 8 og 60 mangler der 6 til 10 planter. 1 parcel 6 mangler der 11 til 15 planter. 1 ubehandlet nr. 5, 19 og 45 dækker afgrøden 50 % og i nr. 54 dækker den 40%. Bedømmelse for virkning på ukrudt skal tages med forbehold, da der er en lille og svingende bestand.

Steen og Verner

Footnote 4: Den 29. juni 2020: 1 ubehandlet nr. 5 og 19 dækker afgrøden 75 % og i nr. 45 og 54 dækker den 70 %. Steen og Verner

Footnote 5: Den 13. juli 2020: De nederste blade hvor er tidligere har været nekroser på er visnet bort. Det er derfor der ikke er meget nekroser tilbage. I de 4 ubehandlede dækker afgrøden 95 %. Verner

Footnote 6: Den 27. juli 2020: Der er kun bedømt for PHYVOR. Vedrørende PHYBLE henvises til tidligere bedømmelser. Afgrøden dækker 100 % i alle ubehandlede. Steen og Verner

Footnote 7: Den 2. oktober 2020: Forsøget optaget den 1. og 2. oktober og udtaget prøver til analyse for stivelse og rest af pesticider. Mie, Per og Uffe.

Footnote 8: Den 15. oktober 2020: Foretaget stivelsesanalyse. Mie og Anja

Appendix 1. The Climate in Flakkebjerg 2019-2020

CLIMATE

This section evaluates the overall weather conditions in Denmark in the growing season and especially in Flakkebjerg where the majority of Aarhus University (AU) trials are located (September 2019–August 2020).

Denmark experienced a particularly high precipitation and average temperatures in fall 19. Precipitation cross country, increased to 349 mm, which set a new record. 24 days with precipitation was recorded in both September and October. Significantly high precipitation of 133 and 129 mm respectively, classified September and October 19 on the list of top 10 months, recorded with highest precipitation since 1874.

Winter 2020 recorded high temperatures and more days than average with precipitation. Both December, January and February showed high temperatures compared with the climate normal average. January set a new temperature record with 5.5°C, which is 3.6°C above average temperature in January (2011-2020). The average temperature during the 3 winter months was 5.0°C, which is 4.5 °C above a 10-year average (2006-2015), and set a new temperature record. Due to the high average temperatures, precipitation during winter was mainly rain. Only few days with frosty days was recorded. Precipitation was high during winter 2020. 280.5 mm was recorded which is 51% above a 10-year average (2006-2015). Both January and February had precipitation above normal. February showed higher precipitation than ever-recorded between (1961-2020). 135.2 mm was recorded, which is 174% above a 10-year average (2011-2020).

Spring 2020 was dry, sunny and with temperature average of 7.4°C, which is close to a 10-year average of 7.6°C (2011-2020). Precipitation during spring was recorded significantly low, and precipitation was unevenly distributed across the country. Highest precipitation was recorded in mid and western Jutland with 115.2 mm. Lowest recorded precipitation was western Zealand 62.0 mm. Spring 2020 was sunny and set a new record. 710.3 hours of sun was recorded which is 19% above a 10-year average (2011-2020) and the highest total of sunny hours recorded since 1920.

Summer 2020 was close to average, regarding, temperature, precipitation and sunny hours. June recorded high temperatures with an average of 16.3°C, which is 1.4 above a 10-year average (2011-2020). The highest overall temperatures during summer was recorded highest in the eastern parts of Denmark, where the average reached 17.2°C, where the western parts measured only 15.9°C. Rainfall was unevenly distributed across the country. Due to general lack of precipitation in spring and a continuously dry summer, drought index increased severely in eastern parts of Denmark. Particularly Central and western Jutland measured significant precipitation due to cloudbursts. In average June and July measured high precipitation of 72.2 and 84.7 mm, respectively, which is 9% and 22% above a 10-year average (2011-2020). August measured high temperatures and relatively few days with precipitation. Days with temperatures above 25°C increased to 12.2, which is far above normal average of 4.3 days. Precipitation in August fell mainly in Jutland, partly as cloudbursts. In general precipitation measured only 68.8 mm which is 20% below a 10-year average (2011-2020).

At Flakkebjerg, especially September and October were characterized by significantly high precipitation with a total of 266 mm, which is 14% above a 10-year average (2006-2015). High amount of precipitation complicated work in the fields, and winter cereals were sown with minor difficulties. Establishment of crops in clay/sandy soil was successful, on the other hand, heavy clay soils partly failed if sown late.

Winter 2020 had high both high temperatures and precipitation. All winter the temperatures recorded were far above normal, with an average of 5.0°C, which is 3.3°C above normal. Snowfall only occurred a few days during winter. No 24 hours frosty days was recorded during winter. Lowest temperatures measured to -4.3°C in March. Precipitation at Flakkebjerg during winter was close to average with 186.8 mm recorded.

February had the highest precipitation during winter with 88.1 mm, which is 78.7% above a 10-year average (2011-2020). The high temperatures continued during March and April. Precipitation decreased significantly from March, and lack of precipitation lasted all summer. The temperatures during summer was close to normal. Temperature average reached 17.1°C, which is 5% above a 10-year average (2011-2020). Due to lack of precipitation, drought index was already in May considerable high. In general, fungicide trials at Flakkebjerg were irrigated 2-3 times during the summer to keep the crop grow and ensure disease attack. Harvest of crops was without any complications due to the dry weather conditions. Cereal yields were moderate due to high drought and moderate disease attack in almost all fields.

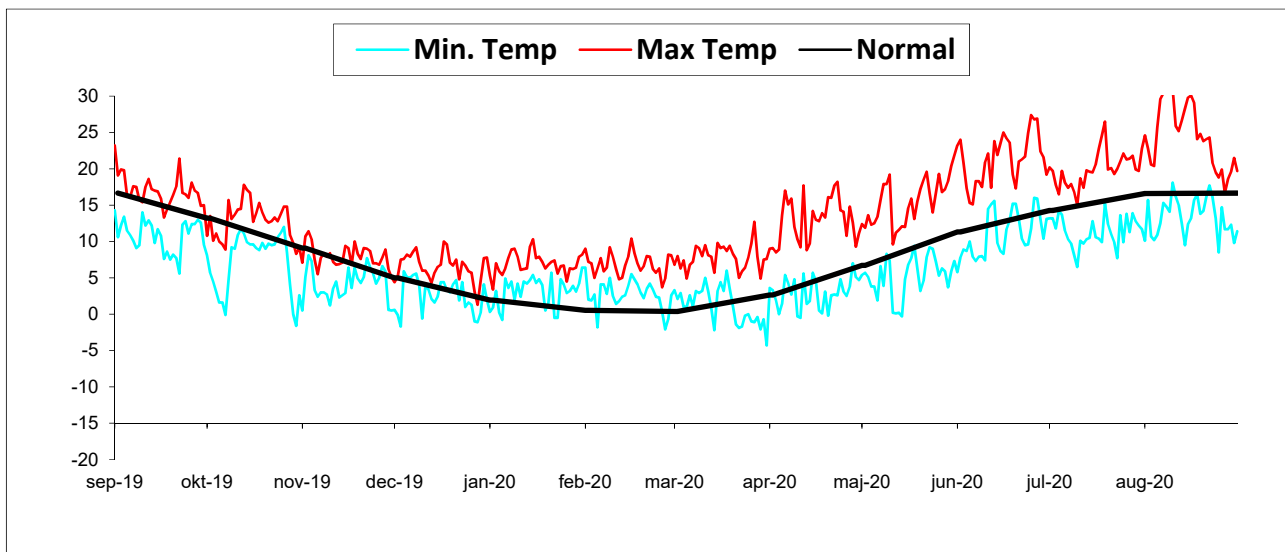


Figure 1. Illustrates climate data graph from AU Flakkebjerg for the growing season September 2019–August 2020. The temperature is in °C.

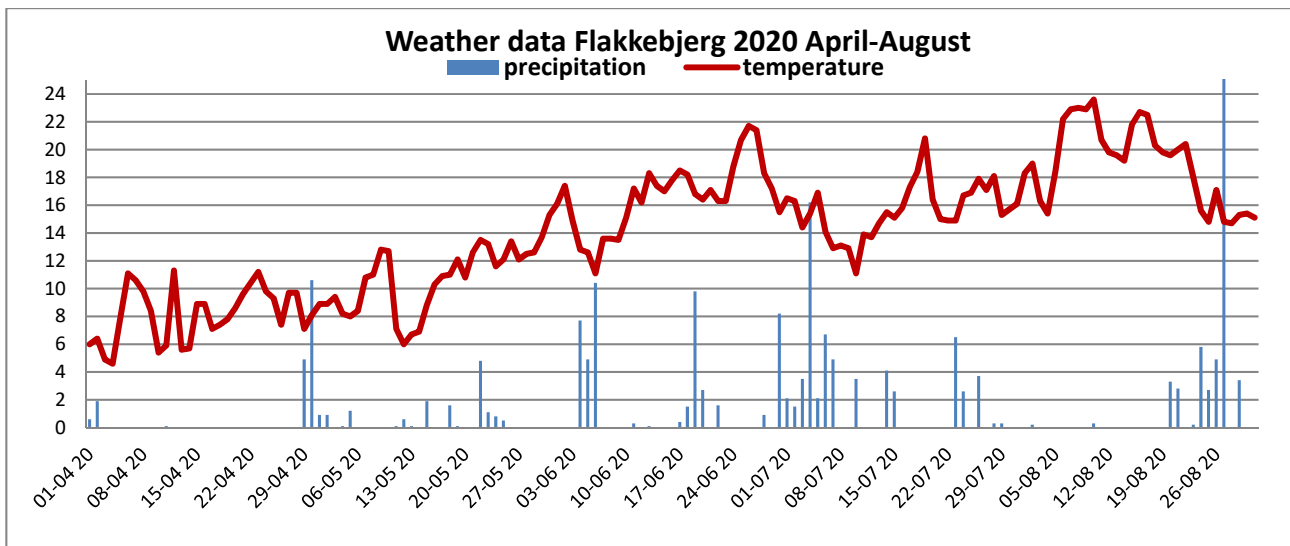


Figure 2. Illustrates climate data graph from AU Flakkebjerg for spring and summer 2020. The temperature is in °C and precipitation in mm.

The automatic weather station at Flakkebjerg is located 12 km from the West Zealand coast. The climate at Flakkebjerg is representative of the area in which most of our trials are situated. The normal climate given as an average of thirty years (1973-2013).

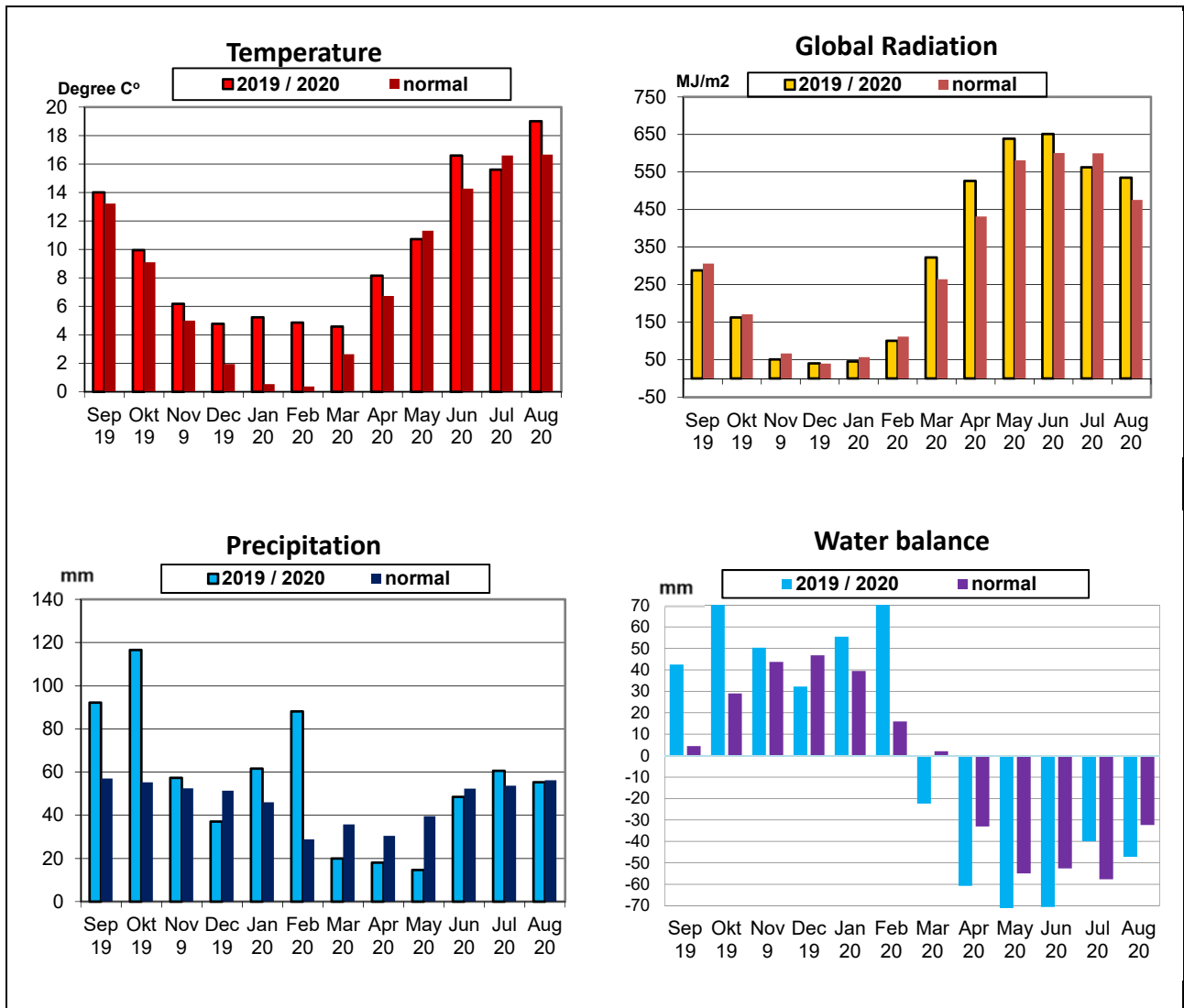


Figure 3. Illustrates climate data from AU Flakkebjerg for the growing season September 2019–August 2020. The temperature is in °C, the global radiation measured in MJ/m², the precipitation in mm, and the water balance is the difference between precipitation and potential evaporation.

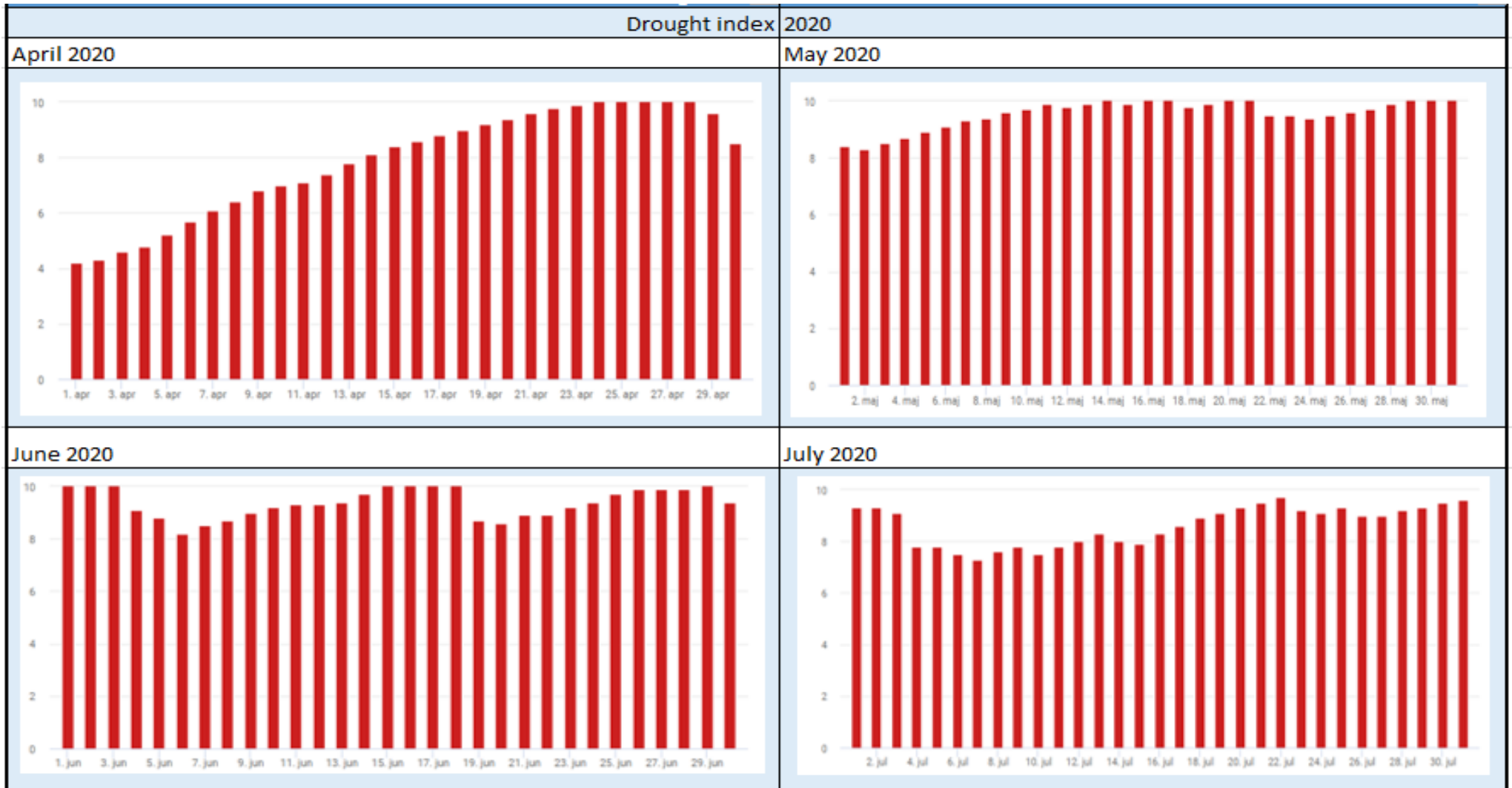
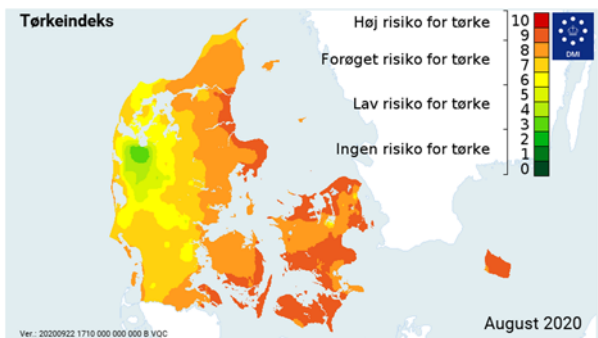
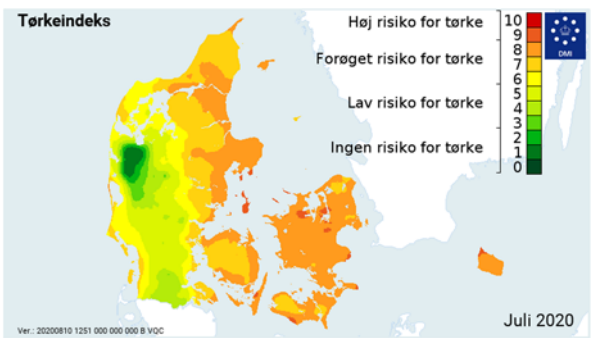
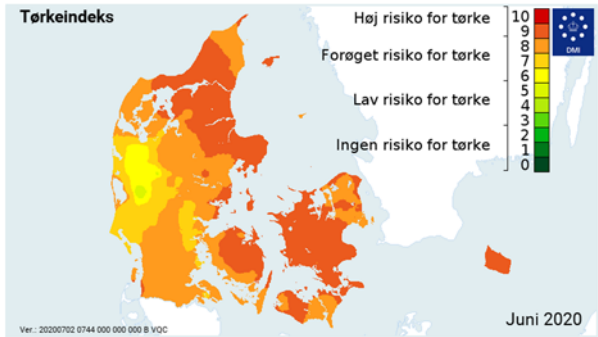
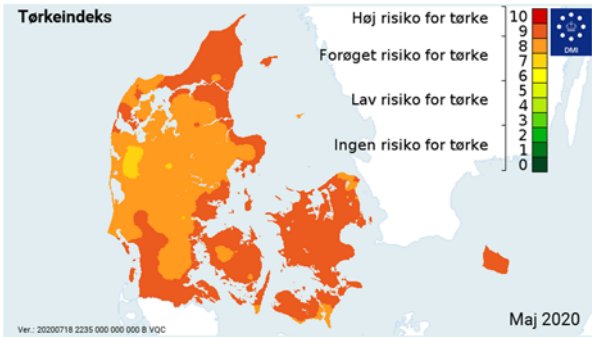
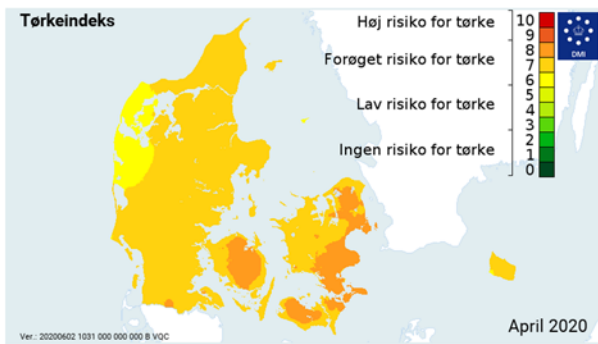
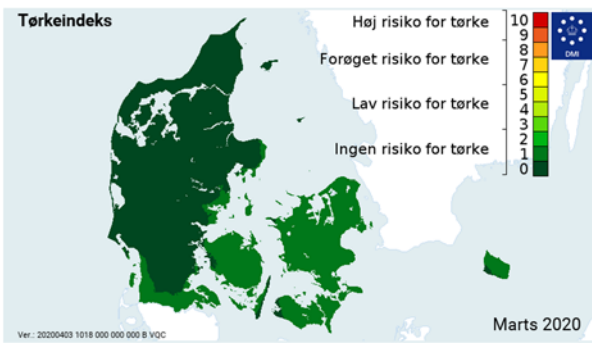


Figure 4. Illustrates drought index for AU Flakkebjerg/Slagelse. May-August 2020. Danish Meteorological Institute (DMI)

Scale: 9-10 =High risk of drought. 6-8= Increased risk of drought. 3-5= Low risk of drought. 0-2= No risk of drought



Drought Index 2020 (DMI)

Scale:

- 0-2 No risk of drought (green)
- 3-5 Low risk of drought
- 6-8 Increased risk of drought
- 9-10 High risk of drought (red)

Figure 5. Illustrates drought index for May-August 2020. Danish Meteorological Institute (DMI).



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.

AU Flakkebjerg
DK-4200 Slagelse

Tlf: +45 87 15 81 95

E-mail: PKJ@agro.au.dk

Kartoffelafgiftsfonden