

Ag-Quest**Crop Aid Nutrition Canola 2019**

Trial ID:	CA19SSK01CAPHA2019	Location:	Saskatoon	Trial Year:	2019
Protocol ID:		Investigator:	Paul Happ		
Project ID:		Study Director:	Kelvin Sander		
		Sponsor Contact:			

General Trial Information

Study Director:	Kelvin Sander		
Investigator:	Paul Happ	Title:	Research Associate

Discipline:	D	fertilizer	
Trial Status:	E	established	
ARM Trial Created On:	Oct-31-2019		
Initiation Date:	May-23-2019	Planned Completion Date:	Sep-30-2019
Completion Date:	Oct-31-2019		

Trial Location

City:	Saskatoon	Country:	CAN	Canada
State/Prov.:	Saskatchewan			
Postal Code:	S7K 3J5	Climate Zone:	Cwb	Temperate, Dry Winter, Warm Summer

Latitude of LL Corner °:	52.123252	N
Longitude of LL Corner °:	106.825101	W

Conducted Under GLP:	No
Conducted Under GEP:	No

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Objectives:

MATERIALS AND METHODS

This 3 year trial was initiated to evaluate a long term 3 crop rotational fertility regime. For this study, Canola was seeded into pea stubble from 2018. Soil tests were taken in spring of 2019 prior to seeding and the recommended fertilizer rates were applied prior to or with the canola at seeding. The Crop Aid Seed treatment was applied to the seed 4.3 mls/kg seed (100 mls/bu of seed) prior to seeding in treatment 2. Seeding rate for canola was 6 kg/ha. On May 23rd, a preseed soil application of Crop Aid Soil at .25 l/ac was performed on trt. 2. The crop was then seeded following this application. The herbicide application was performed on July 3rd. For trt. 2 Crop Aid Soil (.25 l/ac) as well as Crop Aid Foliar (1 l./ac) were tank mixed with Roundup herbicide and applied at the 5-7 lf prebolt stage of development.

Visual vigour assessments were performed on 3 occasions throughout the season using a 0-5 scale where 0 represented a dead plant and 5 represented excellent vigour.

At maturity, the plots were harvested, cleaned, weighed and moisture tested to compare yields. The data was analyzed with Duncan's New MRT at a 10% significance level.

RESULTS AND DISCUSSION

The visual vigour ratings showed consistent vigour ratings between the two treatments with virtually no visual differences between the treatments at any of the three rating intervals. Although the yields at maturity did not show a statistically significant difference between the fertilizer regime (trt. 2) and the UTC, a 2.4 bushel/ac or 6.3% yield boost was obtained in this trial. Test weight was also 1.2% higher with the fertilizer regime vs the check.

NOTE: The 2019 growing season was initially very dry with only 21.5% of normal precipitation from April 1 to June 15th. Rains in later June and into July helped improve crop development.

Contacts

Study Director:	Kelvin Sander		
Organization:	Crop Aid Nutrition		
City+State/Prov:	Saskatoon, Sask.		

Investigator:	Paul Happ	Title:	Research Associate	
Organization:	Ag-Quest (Sask.) Inc			
Address:	Site 204, box 8 RR.2	Phone No.:	306 384-1117	
City+State/Prov:	Saskatoon, Sask.	Mobile No.:	306 230-8792	
Postal Code:	S7K 3J5	E-mail:	paul.happ@agquest.com	
Country:	CAN	Canada		

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Comment:

April	Actual precip. 2.9 mm	Normal precip. 22.9	% of Normal 12.7
May	Actual precip: 10.5mm	Normal precip 39.4	% of Normal 27
June	Actual precip: 80mm	Normal precip 66.6	% of Normal 120
July	Actual precip: 53.4mm	Normal precip 59	% of Normal 90
August	Actual precip: 25.1mm	Normal precip 46.5	% of Normal 54

Application Description

	A	B	C
Application Date	May-20-2019	May-20-2019	Jun-24-2019
Appl. Start Time	10:50 AM	9:30 AM	7:45 AM
Appl. Stop Time	11:10 AM	9:45 AM	8:00 AM
Application Method	SEETRL	SPRAY	SPRAY
Application Timing	SETRLI	PREPLA	POSPOS
Application Placement	SEED	SOIL	FOLIAR
Applied By	Paul H	Ausitn T	Austin T
Appl. Entry Date	Nov-1-2019	Nov-1-2019	Nov-1-2019
Air Temperature Start, Stop	10 C	8 C	14 C
% Relative Humidity Start, Stop	28	28	81
Wind Velocity+Dir. Start		8 kph W	18 kph W
Soil Moisture	VERDRY	VERDRY	NORMAL
% Cloud Cover	0	0	50

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale	CANOLA BCER	CANOLA BCER	CANOLA BCER
Stage Scale Used			BBCH
Stage Majority, Percent			16 60
Stage Minimum, Percent			14 10
Stage Maximum, Percent			17 10
Height Average			14 cm

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Application Equipment

	A	B	C
Appl. Equipment	Seed Treat	Bike Sprayer	Bike Sprayer
Equipment Type	ZIPLOC	BICSPR	BICSPR
Operation Pressure		275 kpa	275 kpa
Nozzle Type		ARINDH	ARINDH
Nozzle Size		110015	110015
Nozzle Spacing		50 cm	50 cm
Nozzles/Row		4	4
Boom Length		1.5 m	1.5 m
Boom Height		40 cm	40 cm
Ground Speed		6.4 kph	6.4 kph
Carrier		WATER	WATER
Application Amount		100 L/ha	100 L/ha
Mix Size	1 L	1 L	1 L
Propellant	CO2	CO2	CO2

Date	By	Context	Notes
Nov-1-2019	Paul Happ	STATUS	Automatically added by ARM: Trial Status updated to 'E' when Planting Date entered.

SE Definitions

	1.	
Crop Type, Code	C	

Instructions:

Please Note: Vigor Rating uses 1-9 scale where 1 is the most vigorous and 9 is the least.

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Crop Type, Code		C		C		C		C		C		C		C	
Crop Name		CANOLA		CANOLA		CANOLA		CANOLA		CANOLA		CANOLA		CANOLA	
Rating Date		Jul-15-2019		Jul-30-2019		Aug-19-2019		Oct-4-2019		Oct-4-2019		Oct-4-2019		Oct-4-2019	
Part Rated		VIGOUR -		VIGOUR -		VIGOUR -		YIELD -		MOIST -		YIELD -		WEIGHT -	
Rating Type		VISUAL		VISUAL		VISUAL		G/PLOT		YIELD		YIELD		YIELD	
Rating Unit		0-5		0-5		0-5		G/PLOT		KG/HA		BU/AC		KG/HL	
Data Entry Date		Nov-1-2019		Nov-1-2019		Nov-1-2019		Oct-31-2019		Oct-31-2019		Oct-31-2019		Nov-1-2019	
Trt-Eval Interval		56 DA-A		71 DA-A		91 DA-A		113 DA-A		113 DA-A		113 DA-A		113 DA-A	
ARM Action Codes														T1	
Number of Decimals										0		1			
Trt	Treatment	Rate	Appl	Code	1	2	3	4	5	6	7				
No.	Name	Rate	Unit	Code	1	2	3	4	5	6	7				
1	Untreated Check				2.8 a	3.0 a	3.7 a	3254.65 a	2098 a	37.8 a	63.93 b				
2	Round Up Weather max	0.51	l/acre		2.8 a	3.0 a	3.7 a	3436.21 a	2231 a	40.2 a	64.69 a				
	Crop Aid Soil	0.25	l/acre												
	Round Up Weather Max	0.33	l/acre	A											
	Crop Aid Foliar	1	l/acre	A											
	Crop Aid Soil	0.25	l/acre	A											
LSD P=.10					0.52		0.52	663.001	401.6	7.23	0.692				
Standard Deviation					0.45	0.00	0.45	538.665	326.3	5.87	0.563				
CV					15.78	0.0	12.2	16.1	15.08	15.08	0.87				
Bartlett's X2					0.00	0.00	0.00	0.094	0.154	0.154	2.02				
P(Bartlett's X2)					.	.	.	0.759	0.695	0.695	0.155				
Replicate F					0.667	0.000	1.667	6.561	7.604	7.604	5.058				
Replicate Prob(F)					0.6664	1.0000	0.2944	0.0462	0.0359	0.0359	0.0707				
Treatment F					0.000	0.000	0.000	0.341	0.495	0.495	5.475				
Treatment Prob(F)					1.0000	1.0000	1.0000	0.5907	0.5204	0.5204	0.0794				

Means followed by same letter or symbol do not significantly differ (P=.10, Duncan's New MRT).
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
 Missing data estimates are included in columns: Yates=4,5,6,7

Column 1: EPPO species (Bayer) codes; CANOLA, , , ; VIGOUR; VISUAL; 0-5 index/scale
 Column 2: EPPO species (Bayer) codes; CANOLA, , , ; VIGOUR; VISUAL; 0-5 index/scale
 Column 3: EPPO species (Bayer) codes; CANOLA, , , ; VIGOUR; VISUAL; 0-5 index/scale
 Column 4: EPPO species (Bayer) codes; CANOLA, , , RAW; yield; G/PLOT
 Column 5: EPPO species (Bayer) codes; CANOLA, , , RAW; MOIST; yield; kilograms per hectare
 Column 6: EPPO species (Bayer) codes; CANOLA, , , ADJUSTED; yield; yield; bushels per acre; T1
 Column 7: EPPO species (Bayer) codes; CANOLA, , , TEST; WEIGHT; kilogram per hectoliter

Could not calculate LSD (% mean diff) for columns 2 because error mean square = 0.

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Crop Type, Code		C CANOLA	C CANOLA	C CANOLA	C CANOLA	C CANOLA	C CANOLA				
Crop Name					RAW	RAW	ADJUSTED				
Rating Date		Jul-15-2019	Jul-30-2019	Aug-19-2019	Oct-4-2019	Oct-4-2019	Oct-4-2019				
Part Rated		VIGOUR -	VIGOUR -	VIGOUR -	YIELD -	MOIST -	YIELD -				
Rating Type		VISUAL	VISUAL	VISUAL	YIELD	YIELD	YIELD				
Rating Unit		0-5	0-5	0-5	G/PLOT	KG/HA	BU/AC				
Data Entry Date		Nov-1-2019	Nov-1-2019	Nov-1-2019	Oct-31-2019	Oct-31-2019	Oct-31-2019				
Trt-Eval Interval		56 DA-A	71 DA-A	91 DA-A	113 DA-A	113 DA-A	113 DA-A				
ARM Action Codes							T1				
Number of Decimals						0	1				
Trt	Treatment	Rate	Appl	Plot	1	2	3	4	5	6	
No	Name	Rate	Unit	Code							
1	Untreated Check				101	2.0	3.0	3.0	2031.50	1332	24.0
					202	3.0	3.0	3.0	2672.40	1659	29.9
					301	3.0	3.0	4.0	4154.80	2685	48.3
					402	3.0	3.0	4.0	4630.80	2943	53.0
					501	3.0	3.0	4.0	3121.20	2044	36.8
					602	3.0	3.0	4.0	2917.20	1926	34.7
Mean =					2.8	3.0	3.7	3254.65	2098	37.8	
2	Round Up Weather max	0.51	l/acre		102	3.0	3.0	4.0	3354.10	2108	37.9
	Crop Aid Soil	0.25	l/acre		201	2.0	3.0	3.0	2232.10	1427	25.7
	Round Up Weather Max	0.33	l/acre	A	302	3.0	3.0	4.0	4336.36*	2818*	50.7*
	Crop Aid Foliar	1	l/acre	A	401	3.0	3.0	4.0	5021.80	3296	59.3
	Crop Aid Soil	0.25	l/acre	A	502	3.0	3.0	4.0	3340.50	2182	39.3
					601	3.0	3.0	3.0	2332.40	1553	27.9
Mean =					2.8	3.0	3.7	3436.21	2231	40.2	

Column 1: EPPO species (Bayer) codes; CANOLA, , , ; VIGOUR; VISUAL; 0-5 index/scale
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Crop Type, Code		C CANOLA				
Crop Name		TEST				
Rating Date		Oct-4-2019				
Part Rated		WEIGHT -				
Rating Type						
Rating Unit		KG/HL				
Data Entry Date		Nov-1-2019				
Trt-Eval Interval		113 DA-A				
ARM Action Codes						
Number of Decimals						
Trt	Treatment	Rate	Appl	Plot		
No.	Name	Rate	Unit	Code	Plot	7
1	Untreated Check				101	62.50
					202	62.70
					301	65.20
					402	64.10
					501	64.90
					602	64.20
Mean =					63.93	
2	Round Up Weather max	0.51	l/acre		102	63.50
	Crop Aid Soil	0.25	l/acre		201	64.60
	Round Up Weather Max	0.33	l/acre	A	302	65.96*
	Crop Aid Foliar	1	l/acre	A	401	64.70
	Crop Aid Soil	0.25	l/acre	A	502	64.60
					601	64.80
Mean =					64.69	