HSCIA Nitrogen Plot 2023

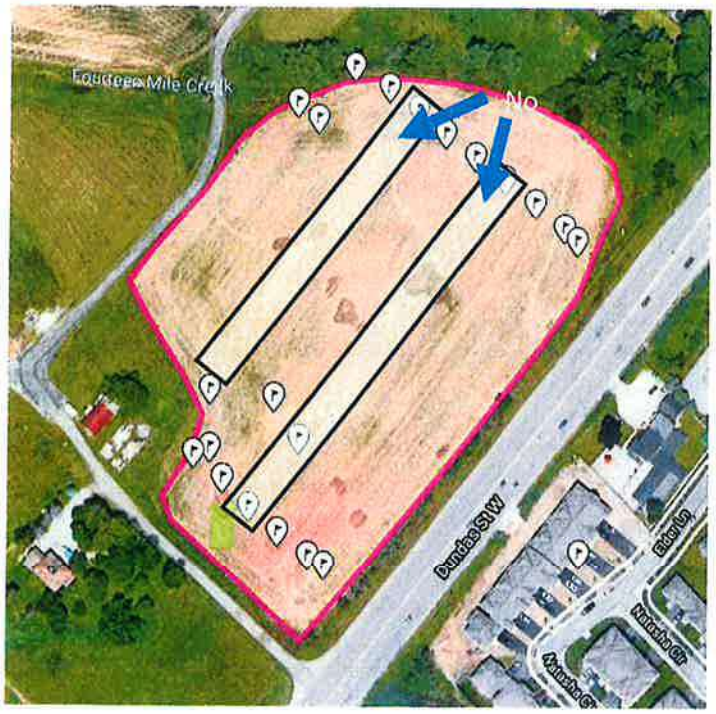
Background: The purpose of this project is to investigate new options available to our members to better manage nitrogen application. With the introduction of PurYield urea, a granular Enhanced Efficiency Fertilizer that consists of a polymer coating, to the Ontario market, we felt it was a good opportunity to better understand what is involved with using this product versus a more "traditional" N management system.

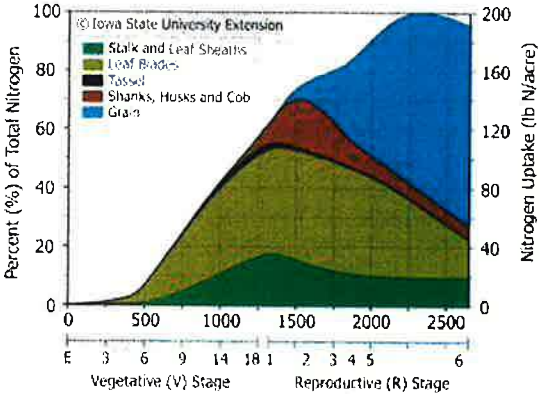
Crops such as corn and wheat require nitrogen throughout their growing season, with the largest demand typically occurring well past planting date. This leads to the dilemma of whether to apply all the required N "up front" or do a split application, which should lead to better N utilization, but has challenges such as application and timing. PurYield, through its delayed availability of N to the crop, is positioned to provide a "best of both worlds" solution.

Although we took these plots to yield, please understand that the plots were not consistent enough, due to weather conditions and bird feeding at grain fill, to draw accurate yield comparison conclusions.

We would like to acknowledge the contributions to this project by Dean Shantz of CRF Agritech for supplying the PurYield product and Lance Pocock & his family for hosting the plot site as well as the summer plot tour. Dave Robinson also planted the plots and harvested them. HSCIA appreciates the support these people and those members who helped in the field very much.

Plot Design: The field is approximately seven acres in size. The PurYield/Urea 50:50 was broadcast across the entire field except for two strips which had straight urea applied to be a check. Everything else was consistent across the field except for this difference in N source.





Throughout the growing season drone imagery (NDVI) and tissue analysis were captured.

Location: Lance Pocock Farm - Palermo

Planting Date: May 23, 2023

Population: 32,200

Hybrid: P9466AM

Tillage: Spring, Disc X 2, Cultivator with coil tine harrow

Previous Crop: Soybean

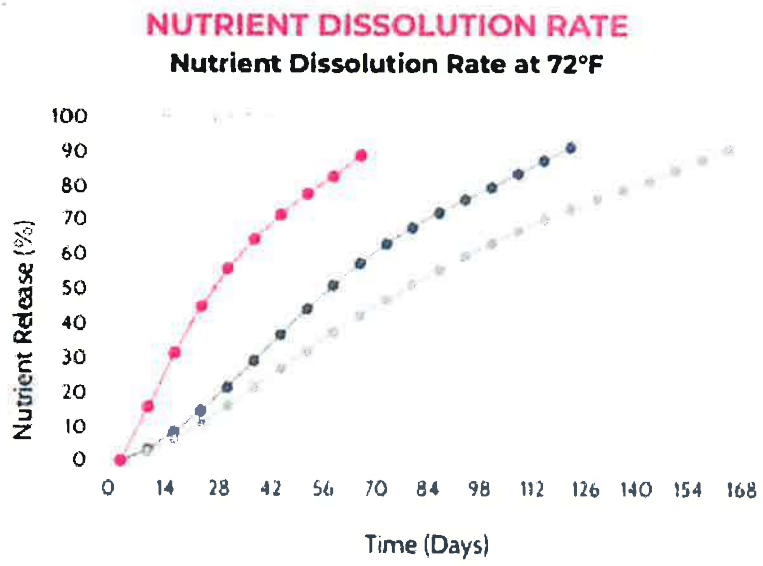
Nitrogen Application: Check – 400 lbs/ac urea (184 lbs/ac actual N)

Variable – 200 lbs/ac PurYield 1 + 200 lbs/ac urea (182 lbs/ac actual N)

Starter Fertilizer: 200 lbs/ac 6-28-28

All fertilizer broadcast prior to cultivator pass

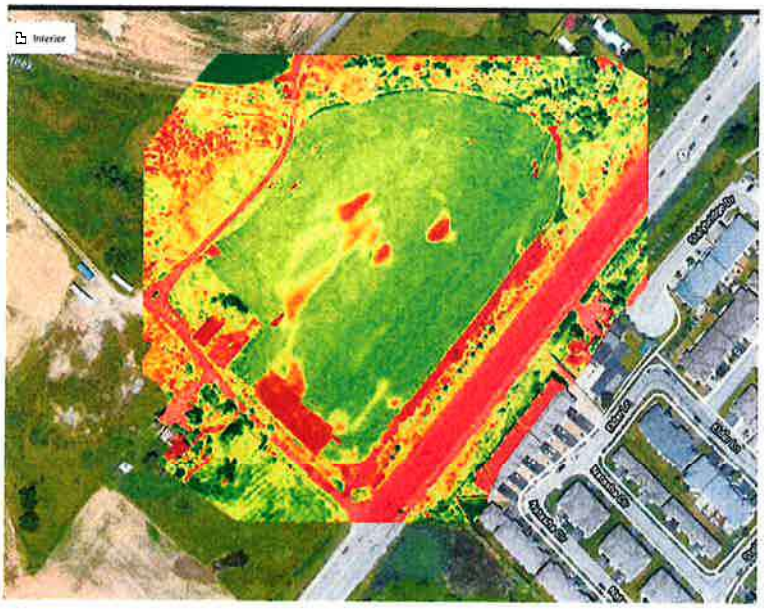
Heavy bird damage at grain filling



Product	Release Range at 22°C	Nutrient Analysis
PurYield 1	50-60 Days	45-0-0
PurYield 2	80-90 Days	44.5-0-0
PurYield 3	120-130 Days	44.5-0-0

RGB Image Sept 26, 2023:

Plant Health August 21, 2023:



Tissue Analysis July 4, 2023:

BROOKSIDE LABORATORIES, INC.

** PLANT TISSUE ANALYSIS **

CropTech
1005 Sideroad 20
Moffat, ON L0P1J0

File Number: 78939
Date Received:07/07/2023
Date Reported:07/10/2023

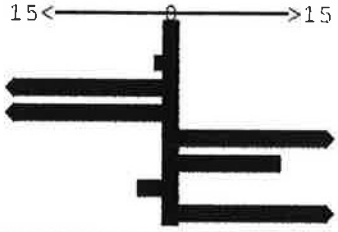
Submitted By: Premier Equipment Ltd.

Lab Number		6929		6930
Location		LANCE N 2023		LANCE N 2023
Description		UREA		UREA
				PURYIELD
Plant Part		Leaves/Lower		Leaves/Lower
PERCENTAGES (%)				
NITROGEN	(N)	3.22	NITROGEN (N)	4.71
PHOSPHORUS	(P)	0.193	PHOSPHORUS (P)	0.305
POTASSIUM	(K)	1.35	POTASSIUM (K)	1.49
CALCIUM	(Ca)	0.60	CALCIUM (Ca)	1.28
MAGNESIUM	(Mg)	0.191	MAGNESIUM (Mg)	0.363
SULFUR	(S)	0.182	SULFUR (S)	0.369
PARTS/MILLION (ppm)				

DRIS INTERPRETATION

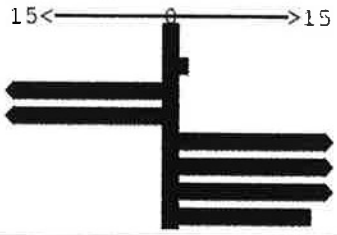
Corn Whole Plant

DRIS INDEX	
N	-1
P	-34
K	-49
Ca	+31
Mg	+10
S	-3
DM	+46



Corn Whole Plant

DRIS INDEX	
N	+1
P	-33
K	-81
C	+60
M	+20
S	+20
D	+13



As the growing season progressed there were visual indications that the PurYield plots were a darker green than the check.

Harvest: December 13, 2023

		Length	Width	Area Acre	Weight	Moisture	Bu/Ac (56 lbs/bu)	Test Weight
1	PY South	602	40	0.55280073	6202	19.7	190.4	53.3
2	No PY S	611	40	0.56106519	6198	19	189.1	53.8
3	PY North	351	40	0.32231404	3150	19.7	165.8	53.9
4	No PY North	361	40	0.33149678	3128	19	161.5	55.7

PY=PurYield

Although we took these plots to yield, please understand that the plots were not consistent enough, due to weather conditions and bird feeding at grain fill, to draw accurate yield comparison conclusions.

Conclusions:

The PurYield product is certainly easy to work with. With it being pink in colour, it was interesting that you could easily see it in the soil several weeks post application still in its original form. It appeared to release at its prescribed time.

The tissue analysis indicated that there was a difference in how the plants were able to utilize the nitrogen with the PurYield treatments consistently showing higher N levels. The NDVI drone imagery also indicated an advantage to PurYield. The combine operator commented that on the neighbouring field where we spread the excess PurYield product there was at least a 20 bu/ac improvement in yield.

The bird damage in this field was quite extensive. There were times when the sky would turn black when you scared them from feeding and got them to fly.

It appears that PurYield is a good fit to crop production by eliminating the need to make an in-crop application of N to realize the agronomic, environmental and economic advantages that a second N application typically delivers.