NEWSLETTER

SPRING 2024

Welcome to the Atlantic Grains Council's 2024 Newsletter. My thanks to all who took time to develop the content. This Newsletter is only one way that the AGC delivers information of interest to cereal and oilseed growers in the region.

In March, the Council partnered with the PEI Soil and Crop Improvement Association and the Department of Agriculture and Land for Cereals and Oilseeds 2024 and the 2024 Taking Charge, Moving Forward Conference. Despite a weather delay on the second day, there were many fine speakers at this event, their presentations have been recorded and are available for viewing at Cereals and Oilseeds 2024. Thank you to Tyler Wright, Margaret Drake and Heather Russell for their organizational efforts which made the conference a success.

This was the fifth year for the Yield Enhancement Network (YEN) which included soybeans for the first time. Congratulations to the YEN participants and those who finished at the top in the various categories. Details on the YEN award winners are in this Newsletter. YEN inspires innovation concerning varieties and the management needed to produce better crops. Another innovation for YEN this year was the development of an Atlantic Canada crop modeling system replacing the UK-based system previously used. The new model will allow us to better understand how crop inputs, management, and climatic variables impact crop production. A big thank-you to the Agriculture and Agri-Food scientists involved: Aaron Mills, Adam Foster, Tandra Fraser, Morteza Mesbah from Charlottetown, Guillome Jego, Sherbrooke and Sheldon Hann, Fredericton.

Last year I indicated AGC's intention to develop proposals to use producer check-off dollars to continue with YEN and on-farm agronomy trials in concert with the Sustainable Canadian Agricultural Partnership Program (the next 5-year block of Federal/Provincial research funding). We are currently working hard to make this happen for the field season of 2024. Stay tuned for an official announcement!

YEN is a cornerstone for our approach, not only do we want to continue it, but there are plans to expand into corn and soybeans and to partner with the Ontario/Great Lakes YEN. Alongside YEN, the on-farm agronomy trial work which seeks to answer your on-farm production questions is also important to AGC. This work is only possible through the funding provided by region's cereal and oilseed producers through our check-off partners and the Canadian Agricultural Partnership program.

Finally, as Chair of AGC I thank the Board of Directors, Catlin Congdon, Neil Campbell, Robert MacDonald, Peter Scott and of course Heather Russell for their contribution to the work of the Council. Wishing everyone a safe, healthy, and prosperous 2024 cropping season.

Roy Culberson, Chairman,
Atlantic Grains Council

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Nova Scotia
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ATLANTIC GRAINS COUNCIL
381 Killam Drive, Moncton, NB E1C 3T1
Telephone: 506.380.9663 • Email: heather@atlanticgrainscouncil.ca
Visit our website www.atlanticgrainscouncil.ca for Research Updates.

ENHANCED EFFICIENCY NITROGEN FERTILIZER'S USE IN GRAIN CORN

Baillie Lynds, B.Sc., MSc Student
Yunfei Jiang, Ph.D., Assistant Professor
Department of Plant, Food, and Environmental Sciences, Faculty of Agriculture, Dalhousie University

What are Enhanced Efficiency Nitrogen Fertilizers (EENFs)?

EENFs are designed to release nitrogen (N) closer to when plant demand is higher and increase nitrogen uptake by the plant (1). This has potential for reducing environmental impact of N fertilizers as less N is left in the soil to cause air and environmental pollution.

Types of EENFs

There are two main types of EENFs; slow release and inhibitors. Slow-release fertilizers have a coating (usually polymer or inert compounds) that have to be dissolved before the N is released. The thickness of these coatings can be altered to delay release longer if desired. Inhibitor products fall into two categories: urease and nitrification inhibitors. These products contain inhibitors that slow down nitrification and ammonia volatilization by inhibiting enzymes that catalyze these processes. (2).

Previous Research

Research on EENFs has been a hot topic recently. Studies have been done looking at the effects of EENFs in many crops, including corn. Results on the effect of EENFs in corn varies greatly. Multiple studies have found EENFs to reduce N2O emissions when compared to standard uncoated urea, however the degree of reduction varies (3,4). In terms of nitrogen use efficiency in grain corn, some studies see a positive impact of EENFs compared to urea, while others have found no significant difference (3,5). Similarly, yield results are varied with some studies finding EENFs to improve yield, while others found no significant difference (3,5,6). Up until now there is still no widely accepted consensus on the use of EENFs in grain corn which prompts further research.

There is an ongoing research project at Dalhousie University Faculty of Agriculture to further investigate the effects of EENFs in grain corn (hybrid Pride Seeds A4939G2). Dr. Yunfei Jiang currently has a master's student, Baillie Lynds, looking at the effects of EENFs and split applications on agronomic and environmental parameters. The project has been funded by Atlantic Grains Council under the Sustainable Canadian Agricultural Partnership (S-CAP) program.

Currently two EENF products are being used in the study, a slow-release polymer coated urea named PurYieldTM, and a double inhibitor product named SuperU®, compared to uncoated urea as control. The experiment was conducted in Truro, NS in 2023 and will be repeated in Truro in 2024 and Harrigton, PEI in 2024 and 2025. One season of data was collected, and preliminary results suggested EENFs did have a positive effect on the environment (reduced nitrate leaching at the end of the growing season), but no significant effect on grain yield. Our findings also suggested that a reduced N rate (100 kg N ha-1) did not result in yield penalty compared to the recommended N rate of 125 kg N ha-1. We also found that EENFs split applications (at planting and V6-V8 growth stage) did not improve grain yield compared to single fertilizer application at planting. The project will be reproduced during the 2024 and 2025 field seasons to compare data from multiple site-years.

Benefits of this research

The results of this research will directly benefit growers as it will provide them with information on the best type, rate, and application timing of EENFs in grain corn. It will also help work towards climate goals including goal 13 (Climate Action) of the United Nations Sustainable Development Goals and reaching Net Zero emissions by 2050 set by the Canadian government as part of their Canadian 2030 Emissions reduction plan (7,8).

References:

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A NEW DISEASE FORECASTING WEBTOOL FOR FUSARIUM HEAD BLIGHT (FHB) MANAGEMENT IN THE MARITIMES

Authors: Adam Foster and Emily Johnstone

Fusarium Head Blight (FHB), a significant threat to cereal crops such as spring wheat, winter wheat, and barley, has been a problem for Maritime cereal producers for many years, with particularly high disease pressure in the 2023 growing season. The primary fungal species of concern that causes FHB is *Fusarium graminearum*. The biology of this fungus is complex, with a broad host range, allowing it to infect many types of plants. The initial release of *F. graminearum* ascospores found on overwintered crop residues is highly influenced by the microclimate within the cereal canopy where high relative humidity (≥ 90%), combined with temperatures up to 30°C, create an ideal environment. These conditions also facilitate the germination of the ascospores and subsequent infection of cereal anthers. Following infection, the fungus proliferates within the tissues of the cereal spikes, causing symptoms like bleached spikelets earlier than senescence associated with plant maturity. As infection progresses, pink or orange masses of spores can develop on the spikelets if warm, humid conditions persist. After harvest, fusarium damaged kernels may appear as shriveled and lightweight, and may display a range of discolorations from chalky-white to pink or orange. A significant concern associated with

FHB is the contamination of grain with mycotoxins, particularly deoxynivalenol (DON) as this toxin poses serious health risks to humans and animals, leading to guideline limits on the acceptable levels in food and feed products.

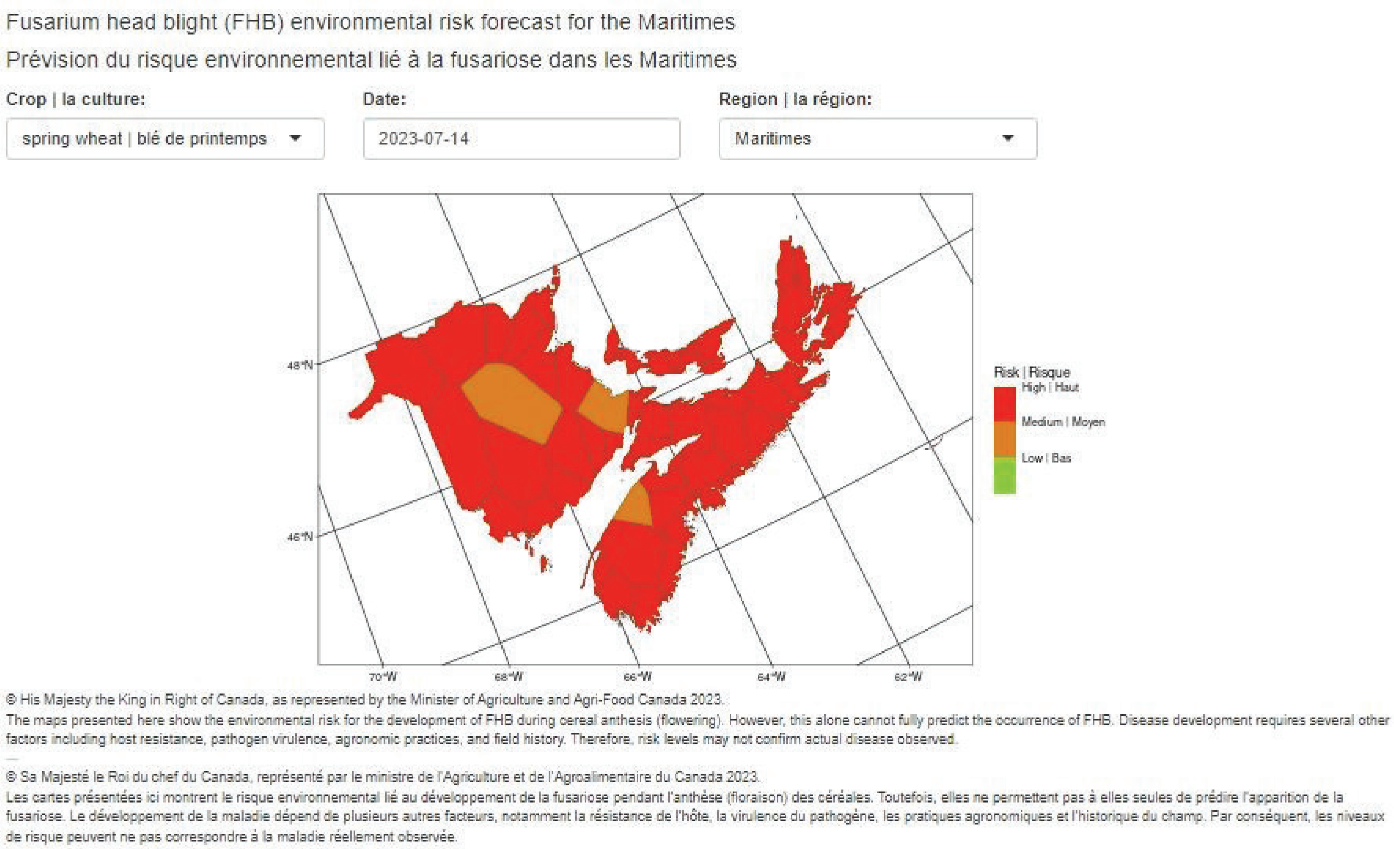
The development of FHB is impacted by several factors, such as crop rotation practices, tillage methods, and the resistance of cereal cultivars. As cereals are most susceptible to infection during the anthesis period (flowering), the environmental conditions around this growth stage are most important for disease development. The specific timing and distribution of ascospore release and infection highlight the essential need for precise and timely disease forecasting, provided by the innovative webtool. Identifying periods of high risk for FHB infection enables growers to apply targeted management strategies, like fungicide applications, at the most effective timing to significantly reduce the disease's effects.

Over the past six years, Agriculture and Agri-Food Canada (AAFC), in collaboration with the Atlantic Grains Council, has been dedicated to identifying the most effective forecast models for environmental risk of FHB in the Maritime provinces. Through detailed analysis of weather conditions and disease development observed in field trials, our team identified the most appropriate models for winter wheat, spring wheat, and barley. These models utilize relative humidity and/or temperature data collected from the previous seven days to accurately predict the likelihood of disease development during the critical anthesis stage of cereal crops. These models were selected based on having high specificity for disease development and incorporated in an automated webtool. This webtool utilizes data from Environment Canada's weather stations across the Maritimes to calculate the daily FHB risk for the area around each selected station. The resulting risk assessments are then presented in an easy-to-interpret, color-coded risk map. This approach not only streamlines the process of disease risk assessment, enabling producers to make informed decisions on the timing and application of management strategies to effectively combat FHB. The FHB environmental web tool will be online in summer 2024 hosted by the Atlantic Grains Council.

Fusarium damaged kernels of wheat

FHB of barley spikelets

FHB of wheat spike



Screenshot of the FHB Environmental Webtool Interface

MARITIME CEREAL VARIETY PERFORMANCE LIST 2024

Tables 1- 4, adapted from the Report of the Sub-committee of
the Atlantic Recommending Committee for Cereal Crops
Full report available at: https://atlanticgrainscouncil.ca/variety-cultivars/

Table/Tableau 1: BARLEY/ORGE

Maritime Cummulative Yield Summary (2020-2023)(1) / Résumé des rendements cumulés aux Maritimes (2020-2023)(1)

Cultivar	Distributor/Distributeur	Type	4 years/ans		3 years/ans		2 years/ans		2023	
			%	(t/ha)	%	(t/ha)	%	(t/ha)	%	(t/ha)
Six Row: covered/Six Rangs: couvert										
AAC Bloomfield	Semences Elite Seeds	Feed/Provende	96	3.58	97	3.66	98	3.67	96	2.81
Doriane	Semences Elite Seeds	Feed/Provende	105	3.88	104	3.91	105	3.94	101	2.95
Rafale	Semican Inc	Feed/Provende	100	3.73	100	3.78	101	3.78	103	3.01
Richer	SeCan	Feed/Provende	-	-	98	3.70	102	3.82	113	3.32
Tsunami	Semican Inc	Feed/Provende	-	-	-	-	-	-	108	3.18
Two Row: covered/Deux Rangs: couvert										
AAC Bell	SeCan	Feed/Provende	103	3.82	103	3.88	100	3.75	88	2.58
AAC Ling	SeCan	Feed/Provende	97	3.61	97	3.64	96	3.62	102	3.00
AAC Madawaska	Eastern Grains de l'Est	Feed/Provende	100	3.71	102	3.84	103	3.87	104	3.04
AAC Synergy	Semican Inc	Malt/Brassicole	99	3.67	100	3.75	99	3.72	92	2.71
Leader	NB: Eastern Grains de l'Est PEI: McCardle Bros	Feed/Provende	100	3.70	99	3.74	98	3.67	95	2.79
AAC Sorel	SeCan	Feed/Provende	-	-	-	-	-	-	98	2.86
Means/Moyenne			**100**	**3.71**	**100**	**3.77**	**100**	**3.76**	**100**	**2.93**
Stations year/Années-stations			**14**		**10**		**6**		**2**	

(1): Data reliability increases with the number of trial years / La fiabilité des données augmente avec le nombre d'année d'essai

Plant Breeders' Right under the legislation of PBR 78 or 91 (https://pbrfacts.ca) /Protection des obtentions végétales en vertu de la législation POV 78 ou 91 (https://pbrfacts.ca)

Table/Tableau 2: OATS/AVOINE

Maritime Cummulative Yield Summary (2020-2023)[(1)] / Résumé des rendements cumulés aux Maritimes (2020-2023)[(1)]

Cultivar	Distributor / Distributeur	Type	4 years/ans		3 years/ans		2 years/ans		2023	
			%	(t/ha)	%	(t/ha)	%	(t/ha)	%	(t/ha)
Hulled/Couverte										
AAC Banner	SeCan	Milling/Minoterie	96	3.97	96	4.21	92	4.24	84	2.77
AAC Excellence	Eastern Grains de l'Est	Milling/Minoterie	104	4.30	103	4.52	101	4.64	106	3.49
AAC Nicolas	SeCan	Milling/Minoterie	105	4.34	106	4.65	106	4.87	107	3.51
Canmore	Semican Inc	Milling/Minoterie	98	4.07	96	4.22	97	4.44	99	3.26
CDC Orrin	Semican Inc	Milling/Minoterie	102	4.23	101	4.42	102	4.68	97	3.20
CS Camden	Eastern Grains de l'Est	Milling/Minoterie	100	4.13	101	4.41	105	4.80	110	3.60
Kalio	Semences Elite Seeds	Feed/Provende	100	4.15	98	4.29	99	4.55	99	3.24
Riley	C & M Seeds	Feed/Provende	94	3.89	92	4.02	92	4.21	97	3.18
Nika	Semences Elite Seeds	Feed/Provende	-	-	106	4.63	106	4.85	114	3.74
CDC Endure	Semican Inc	Milling/Minoterie	-	-	-	-	101	4.64	87	2.87
Hulless/Nue										
Bolero	Semican Inc	-	-	-	-	-	-	-	71	2.32
Means/Moyenne			**100**	**4.14**	**100**	**4.37**	**100**	**4.59**	**100**	**3.29**
Stations year/Années-stations			**12**		**9**		**6**		**3**	

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Table/Tableau 3: SPRING WHEAT/BLÉ DE PRINTEMPS

Maritime Cummulative Yield Summary (2020-2023)[(1)] / Résumé des rendements cumulés aux Maritimes (2020-2023)[(1)]

Cultivar	Distributor/Distributeur	Class/Classe	4 years/ans		3 years/ans		2 years ans		2023	
			%	(t/ha)	%	(t/ha)	%	(t/ha)	%	(t/ha)
Spring Wheat/Blé de printemps										
AAC Maurice	Secan	Milling/Minoterie	91	2.65	89	2.71	84	2.74	81	1.96
AAC Scotia	Semican Inc	Milling/Minoterie	110	3.19	106	3.22	103	3.36	107	2.60
AC Helena	Meadow Brook Farms	Milling/Minoterie	103	3.00	101	3.06	97	3.17	106	2.57
AC Walton	Secan	Milling/Minoterie	93	2.71	90	2.75	93	3.04	95	2.30
Raven	C & M Seeds	Milling/Minoterie	118	3.42	114	3.48	115	3.75	119	2.89
Rocket	Semican Inc	Feed/Provende	108	3.14	108	3.28	105	3.42	101	2.45
Wilkin	C & M Seeds	Milling/Minoterie	76	2.20	92	2.80	91	2.97	73	1.77
Arvida	Semican Inc	Milling/Minoterie	-	-	-	-	106	3.45	114	2.76
Basile	Secan	Feed/Provende	-	-	-	-	105	3.43	99	2.40
Peribonka	Semican Inc	Feed/Provende	-	-	-	-	-	-	107	2.60
Means/Moyenne			100	2.90	100	3.04	100	3.26	100	2.43
Stations year/Années-stations			16		12		8		4	

(1): Data reliability increases with the number of trial years / La fiabilité des données augmente avec le nombre d'année d'essai

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Table/Tableau 4: WINTER WHEAT/BLÉ D'AUTOMNE
Maritime Cummulative Yield Summary (2020-2023)(1) / Résumé des rendements cumulés aux Maritimes (2020-2023)(1)

Cultivar	Distributor / Distributeur	Type	4 years/ans		3 years/ans		2 years/ans		2023	
			%	(t/ha)	%	(t/ha)	%	(t/ha)	%	(t/ha)
Winter Wheat/Blé d'automne										
25R40	Pioneer	Pastry/Pâtisserie	109	4.99	108	5.22	110	4.71	111	3.70
25R61	Pioneer	Pastry/Pâtisserie	92	4.21	89	4.31	91	3.90	90	2.99
25R74	Pioneer	Pastry/Pâtisserie	102	4.68	100	4.82	105	4.49	116	3.87
AC Sampson	Meadowbrook Seeds	Milling/Minoterie	84	3.84	77	3.72	74	3.17	62	2.07
B654SRW	Brevant Seeds	Pastry/Pâtisserie	110	5.06	106	5.11	107	4.60	110	3.67
Blaze	C & M Seeds	Pastry/Pâtisserie	102	4.68	97	4.67	103	4.41	113	3.77
Cruze	C & M Seeds	Pastry/Pâtisserie	99	4.53	115	5.54	95	4.07	91	3.04
PRO81	C & M Seeds	Milling/Minoterie	99	4.56	97	4.67	99	4.23	98	3.29
UGRC Ring	Semences Elite Seeds	Pastry/Pâtisserie	100	4.59	98	4.73	99	4.22	99	3.31
Adrianus	C & M Seeds	Milling/Minoterie	105	4.84	101	4.89	105	4.49	108	3.60
Swoop	C & M Seeds	Pastry/Pâtisserie	-	-	110	5.32	112	4.79	115	3.83
Champlain	Semican Inc	Milling/Minoterie	-	-	-	-	-	-	74	2.46
Frontenac	Semican Inc	Feed/Provende	-	-	-	-	-	-	110	3.69
Montcalm	Semican Inc	Milling/Minoterie	-	-	-	-	-	-	92	3.09
OAC Constellation	Secan	Pastry/Pâtisserie	-	-	-	-	-	-	112	3.73
Means/Moyenne			**100**	**4.60**	**100**	**4.82**	**100**	**4.28**	**100**	**3.34**
Stations year/Années-stations			**12**		**9**		**6**		**3**	

(1): Data reliability increases with the number of trial years / La fiabilité des données augmente avec le nombre d'année d'essai
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Distributors/Distributeurs

Brevant Seeds	Justin Toner	17, 5th Ave St-André, NB, E3Y 2M2 justin.toner@corteva.com	(506) 479-0444
C & M Seeds	Ellen Sparry	6180 5th Line, Palmerston, ON, N0G 2P0 www.redwheat.com	1 (888) 733-9432
Eastern Grains de l'est	Éric Thériault	260, 3rd Tier Road, Drummond, NB, E3Y 2V2 eric@easterngrains.ca	(506) 473-6661 (506) 473-0939
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Meadow Brook Farms	David Mol	426 Hwy 2, Charlottetown, PE, C1A 7N9 davidmol@live.com	(902) 628-9292
Pioneer	Liam Bracken	liam.bracken@corteva.com	(343) 542-9431 (343) 542-9431
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Semican Inc	Matt Taylor	280 West Steadman Rd, Berwick, NS, B0P 1E0 mtaylor@semican.ca www.semican.ca	(902) 300-7775

SUSTAINABILITY OF PERENNIAL CROPS: AN UPDATE ON THE KERNZA® PROJECT

By Brittany Cole, PhD student at Dalhousie University

Fitting perennials into annual cropping systems

Even though the world is generating more food than historically was possible, agriculture is limited by cultivating few annual crops. Annual plants were selected as crops for their ability to grow in disturbed soils and quick lifecycle to produce seed, but less consideration was given to resilience under stressful conditions. Climate change is impacting annual weather patterns and subsequently leaving annual crop yields more unpredictable and vulnerable to losses. There are also environmental and sustainability concerns with annual crop cultivation, including soil erosion, nutrient loss, and energy inputs. There is no single solution to these problems, rather a collection of tools and methods to develop a more resilient system.

Natural environments have a greater potential to adjust to change than agriculture because of characteristics like diverse communities, persistent ground cover, and more stabilized soils. Mimicking some aspects of nature has potential to strengthen agricultural systems under climate change pressures, and modern agriculture has implemented some of these strategies through cover cropping and underseeding grain crops with perennial forage.

Perennial plants dominate over annuals in nature; the persistence of perennials supports essential soil communities. Established root systems and nutrient stores also prepare perennial plants for stressful conditions, such as drought. Perennials seem ideal but with new crop development, there are challenges and trade-offs. Most perennials identified for agricultural use dedicate more resources to root establishment and vegetative growth in the first year. The lack of seed production until the second growing season reduces the sustainability and economic potential as an agricultural crop. The diversity found in nature provides a solution to the limitations of perennial crops; cultivating annuals and perennials together creates a more complete agriculture system where the annual provides the immediate grain yield and the perennial provides environmental benefits and persistent yields. Cultivating perennials and annuals in biculture also has the potential to reduce nitrogen fertilizer requirements; adding a perennial legume alongside a perennial grain allows the legume to fix nitrogen in the soil over enough years to sustain grain production without synthetic nitrogen inputs. Understanding the agronomy and suitability of these strategies is a primary focus of the Maritime Kernza® project.

The Maritime Kernza® project

In the last decade, we have seen the timely commercialization of a few long-living, perennial grain crops. Intermediate wheatgrass, registered as Kernza® by The Land Institute, is a promising alternative to annual wheat (Figure 1). Traditionally cultivated as a forage crop in the Canadian Prairies, Kernza® has been selectively bred for grain yield while maintaining perenniality and forage production. Research has focused on agronomy and yield enhancement to become more competitive with annual crop yields without diminishing the higher quality grain in protein and dietary fibre than in annual wheat.

In 2022, the first Kernza® trial plots were established at four sites in the Maritimes, and in 2023 the first

Figure 1. *Maritime Kernza® stand at flowering.*

grain harvest was taken from these stands (Figure 2). Grain yields were similar to trials in the Canadian Prairies, ranging from 300 – 700 kg/ha. Annual crops cultivated in the Prairies are often not well suited for the Maritimes but this does not appear to be the case for Kernza®, demonstrating another possible advantage of cultivating perennial grains: the range of conditions the crop will establish in is extensive.

Figure 2. *2023 Kernza® grain harvest from field to cleaned grain.*

One of the larger concerns identified in the 2022 Kernza® stands was weed pressure. Plots were inundated with weeds in the seeding year, but weeds were reduced to 0.03 – 6% by first grain harvest. This indicates the competitiveness of Kernza® against weeds in important grain production years, which reduces the need for herbicides.

Another aspect to Kernza® cultivation is the straw component. Straw yields in 2023 ranged from 2.4 – 6.1 t/ha. The straw and potential forage harvest from fall re-growth provide an additional revenue stream to the grain production that reduces the economic risk in cultivating crops under variable growing conditions.

In addition to assessing best cultivation practices for harvestable yield, this project investigated underseeding barley with Kernza®, followed by frost seeding red clover in the second year. Identifying the best seeding rate for the mixed stand has had challenges, but if a successful biculture can be developed, this system of annual and perennial grains combined with a legume will have the perenniality and diversity to reduce cultivation inputs and support resilience.

Producer adoption of perennial grains

It is not enough to demonstrate the capabilities of a new crop in a research setting; these crops also need to fit into existing cropping systems. Kernza® was included in a 3-year New Brunswick potato rotation to identify the suitability of the perennial grain and the environmental benefits in a more realistic setting. While the results of this trial will not be available until after the 2025 harvest, it is expected that Kernza® will improve soil health to comparable levels of a perennial forage.

Generally, agriculture is on a cycle of changing to maintain efficiency and production under evolving climates, consumer demands, and profitability (Figure 3). Incorporating perennials into agricultural cropping systems is not a solo solution to modern issues impacting agriculture; developing well-rounded systems that consider the crop traits, field diversity, successional impacts, and the local landscape are necessary components to sustainability. There are challenges to incorporating new crops into existing systems, but we may risk lagging in the agricultural cycle if we do not research and adopt these strategies.

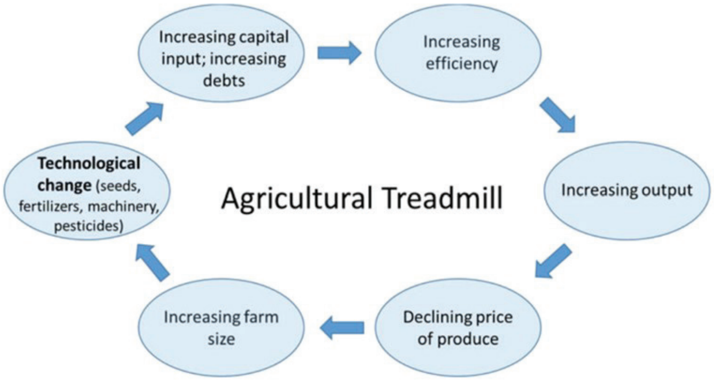


Figure 3. *Illustration from Crews TE, Carton W, Olsson L. (2018). Is the future of agriculture perennial? Imperatives and opportunities to reinvent agriculture by shifting from annual monocultures to perennial polycultures. – based on concepts outlined in Cochran, 1958.*

2024 CORN GUIDE FOR THE MARITIME PROVINCES
GUIDE DU MAÏS 2024 POUR LES MARITIMES

MARITIME GRAIN CORN HYBRID PERFORMANCE LIST
Performance des hybrides de maïs-grain aux Maritimes

HYBRID / HYBRIDES	CHU / UTM	SPECIAL TRAITS / TRAITS Spéciaux	SITE YEARS / STATIONS ANNÉES	3-YEARS/ANS Yield @ 15.5% Moisture / Rendement à 15.5% d'humidité (t/ha)	3-YEARS/ANS Grain Moisture Content / Humidité (%)	3-YEARS/ANS Test Weight / Poids spécifique (kg/hL)	3-YEARS/ANS Stalk Breakage / Tiges brisées (%)	2-YEARS /ANS Yield @ 15.5% Moisture / Rendement à 15.5% d'humidité (t /ha)	2-YEARS /ANS Grain Moisture Content / Humidité (%)	2-YEARS /ANS Test Weight / Poids spécifique (kg/hL)	2-YEARS /ANS Stalk Breakage / Tiges brisées (%)	2023 Yield @ 15.5% Moisture / Rendement à 15.5% d'humidité (t/ha)	2023 Grain Moisture Content Humidité (%)	2023 Test Weight / Poids spécifique (kg/hL)	2023 Stalk Breakage / Tiges brisées (%)
P7574AM (PIONEER)	2150	HX1, YGCB, RR2	15	10.01	21.77	68.92	5.48	9.64	21.31	68.74	8.10	9.85	23.10	68.54	1.70
DLF 2158VT2P RIB (DLF PICKSEED)	2175	GENVT2P	5									11.22	23.44	67.80	0.40
P7844AM (PIONEER)	2225	HX1, YGCB, RR2	15	11.16	24.20	67.39	2.81	10.40	23.25	67.29	3.90	10.08	26.14	66.07	3.20
DLF2210VT2P RIB (DLF PICKSEED)	2225	GENVT2P	39	10.18	24.27	66.94	2.36	9.32	23.24	67.07	3.50	9.02	27.54	64.78	0.00
MZ 1544DBR (MAIZEX)	2250	VT2P	15	11.48	23.67	65.85	4.45	10.90	22.29	66.15	6.60	10.28	25.40	64.49	1.80
A4646G2 RIB (PRIDE)	2300	VT2P	35	10.72	23.09	68.00	6.38	10.24	21.82	67.73	9.50	10.04	25.20	66.98	2.50
P7955AM (PIONEER)	2300	HX1, YGCB, RR2	30	10.51	23.81	69.90	6.31	10.074	23.24	69.58	9.30	9.51	25.34	68.55	2.40
MZ 1688DBR (MAIZEX)	2300	VT2P	30	11.42	23.44	68.19	4.05	11.04	21.99	68.23	6.00	10.92	25.92	66.86	0.90
B79H45AM (BREVANT)	2300	HX1, YGBC, RR2	15	11.53	24.42	66.37	8.22	10.94	23.93	66.26	12.30	10.28	25.94	65.00	6.40
DKC30-63RIB (DEKALB)	2325	VT2P	15	10.16	24.07	67.81	3.57	9.52	23.18	67.57	5.30	9.07	27.26	66.49	1.30
NK7837-V (SYNGENTA)	2350	Vip	25	10.27	24.79	69.39	2.43	10.24	23.68	69.26	3.30	9.63	26.82	67.72	3.30
A4939G2 RIB (PRIDE)	2400	VT2P	39	11.61	23.51	66.86	5.06	11.04	22.38	66.92	7.40	10.68	25.56	65.66	0.20
B82R52 (BREVANT)	2400	HX1, YGCB, RR2	30	11.43	26.07	65.59	5.95	10.98	25.08	65.81	8.40	11.00	27.80	64.10	2.10
MZ 2266DBR	2450	VT2P	10					10.57	23.26	68.51	6.00	11.07	27.24	67.58	0.40
DLF2562VT2P RIB (DLF PICKSEED)	2475	GENVT2P	25	11.65	26.82	65.87	4.81	11.26	25.75	65.61	7.00	11.40	29.34	64.27	0.60
NK8204-V (SYNGENTA)	2550	Vip	25	10.44	27.07	65.72	2.33	9.69	26.49	65.33	3.20	9.16	31.04	63.02	1.10
MZ 2452DUR (MAIZEX)	2550	DUR	15	12.38	28.33	65.38	4.54	11.73	27.71	65.31	6.80	11.36	31.96	63.38	2.20
GRAND MEAN				*10.94*	*24.79*	*67.33*	*4.66*	*10.38*	*23.62*	*67.47*	*6.80*	*10.01*	*26.13*	*67.18*	*1.82*

Special Traits: AM= AcreMax insect protection / Protection insecte AcreMax , VT2P = VT DoublePro insect protection / Protection insecte VT DoublePro, RR or RR2 = Roundup Ready herbicide tolerance / Hybride Roundup Ready, HX1 = Herculex 1 insect protection / Protection insecte Herculex , VIP = Viptera insect protection / Protection insecte Viptera, YGCB = Yieldguard Corn Borer insect protection / Protection insecte Yieldguard DUR = Agrisure Duracade insect protection / Protection insecte Agrisure Duracade

MARITIME SILAGE CORN HYBRID PERFORMANCE LIST
Performance des hybrides de maïs-ensilage aux Maritimes

HYBRID / HYBRIDES	CHU / UTM	Special Traits / Traits SPÉCIAUX	Site Years / Stations années	3-YEARS/ANS Dry Matter Plant Yield / Rendement (t/ha)	3-YEARS/ANS Plant Dry Matter / Humidité (%)	3-YEARS/ANS Stalk Breakage / Tiges brisées (%)	2-YEARS/ANS Dry Matter Plant Yield / Rendement (t/ha)	2-YEARS/ANS Plant Dry Matter / Humidité (%)	2-YEARS/ANS Stalk Breakage / Tiges brisées (%)	2023 Dry Matter Plant Yield / Rendement (t/ha)	2023 Plant Dry Matter / Humidité (%)	2023 Stalk Breakage / Tiges brisées (%)
MS 8022R (MAIZEX)	2225	RR2	15	18.17	36.33	10.6	17.36	36.36	14.60	17.06	34.40	10.64
B79H45AM (BREVANT)	2300	HX1, YGCB, RR2	15	16.90	38.35	10.20	15.79	39.0	14.90	15.75	36.40	10.38
B82R52AM (BREVANT)	2400	HX1, YGCB, RR2	20	17.25	37.83	8.20	16.05	38.20	11.90	15.49	34.64	5.56
P8294AM (PIONEER)	2400	HX1, YGCB, RR2	15	18.44	37.50	5.80	16.58	37.29	8.70	16.93	34.70	2.04
MZ 2452DUR (MAIZEX)	2550	DUR	15	19.53	35.81	3.70	18.14	35.94	7.10	18.03	32.88	1.36
NK8618-D (SYNGENTA)	2650	DUR	15	18.99	34.98	4.60	17.61	35.00	6.80	17.40	32.14	2.68
GRAND MEAN				*17.34*	*36.78*	*6.90*	*16.46*	*37.11*	*10.30*	*16.21*	*34.46*	*4.76*

Corn testing contributions in 2023 were made by Charlottetown Research and Development Centre, Agriculture & Agri Food Canada, Perennia Food and Agriculture, New Brunswick Department of Agriculture,
Aquaculture and Fisheries and NB Soil & Crop Improvement Association. The 2024 Maritime Corn Hybrid Testing Report has been prepared by Perennia on behalf of the Maritime Corn Performance Committee and is posted at https://atlanticgrainscouncil.ca/variety-cultivars/ For further information contact Caitlin Congdon: ccongdon@perennia.ca

Performance Index System and Criteria for Inclusion on the Performance List

A combined yield/maturity index called the Performance Index (PI) is calculated for each hybrid in each trial. The PI is compared to a standard which is made up of the average yield and maturity levels of three early and three late standards. This system allows for each hybrid to be compared to the standard and minimizes the influence of yearly fluctuations in weather and environmental factors since both the standards and test hybrids experience the same conditions at each location. The PI is averaged across all sites for each hybrid and measured against the criteria for inclusion on the performance list. The PI for each individual site can be found in the full report. (https://atlanticgrainscouncil.ca/)

Performance Index values below 100 are inferior and those above 100 are superior to the boundaries established by the yield and maturity levels of the standard hybrids on a yield verses maturity graph. Grain and/or silage hybrids may be listed when they meet any of the following criteria and have acceptable levels for stalk breakage, emergence, and other characteristics:

1. A cumulative performance index level of 105.0 or greater with 1 year's testing (minimum 4 site years) – exceptional yield and maturity.
2. A cumulative performance index level of 100.0 or greater with 2 year's testing (minimum 7 site years) – average or greater yield and maturity.
3. A relative maturity level of 100 + Y or greater and a relative yield level of 100 – Y or greater (minimum 7 site years) – high yielding and high moisture (later maturing).
4. A relative maturity level of 96.0 or greater and a relative yield level of 105.0 or greater (minimum 7 site years) – low moisture (early maturing) and moderate yield.

Further information on criteria for inclusion or retesting and unacceptable hybrid performance can be found in the full report (https://atlanticgrainscouncil.ca/)

2023 MARITIME SOYBEAN PERFORMANCE TRIALS
PERFORMANCES DU SOYA AUX MARITIMES 2023

These trials were seeded at a rate of 55 seeds/m2 in small plots (6-7m2) / Essais semés au taux de 55 graines/m2 en petites parcelles (6-7m2). 55 seeds/m2 ≈ 222,500 seeds per acre / graines par acre. Trial Coordinator/Coordinateur Doug MacDonald Research Agronomist Atlantic AgriTech Inc. doug@atlanticagritech.com

The following tables were extracted from the complete trial report which can be found on the Atlantic Grains Councils website at: https://atlanticgrainscouncil.ca/variety-cultivars/

Table/Tableau 1: Yield of Conventional Soybean, 2021-23, 000.5-0.1 (≈2200-2575 CHU/UTM[i]) Rendement du Soya conventionnel

Cultivar	Distributor / Distributeur	Maturity Maturité	CHU/ UTM[(i)]	3 years/ans		2 years/ans		2023	
				(%)	(kg/ha)	(%)	(kg/ha)	(%)	(kg/ha)
SZDT4244	Saatbau Canada Inc.	00.1	2275					83%	2851
Abaca	SG CERESCO inc.	00.5	2300	108%	3721	109%	3853	104%	3572
Siberia	Prograin	00.2	2375	84%	2899	79%	2782	80%	2755
Prostar	SEMICAN INC	00.5	2400					97%	3336
Aurelina	SG CERESCO inc.	00.7	2450	104%	3603	103%	3649	108%	3696
JAGO	SG CERESCO inc.	00.5	2475	109%	3768	107%	3784	105%	3602
Maya	Prograin	00.7	2475	99%	3430	100%	3558	110%	3777
Liska	Prograin	00.3	2400	88%	3028	86%	3044	83%	2836
Mozart	SEMICAN INC	00.7	2475			99%	3513	94%	3224
Kazart	SEMICAN INC	00.8	2550			108%	3839	117%	4014
Hana	Prograin	0.1	2575	108%	3740	109%	3853	120%	4122
Means					3456		3542		3435
Sites					9		6		3[ii]

Table/Tableu 2: Yield of Conventional Soybeans, 2021-23, 0.3-1.2 (≈2600-2850 CHU/UTM) Rendement du Soya conventionnel, 2021-23

Cultivar	Distributor / Distributeur	Maturity Maturité	CHU/ UTM[(i)]	3 years/ans		2 years/ans		2023	
				(%)	(kg/ha)	(%)	(kg/ha)	(%)	(kg/ha)
Panorama	Sevita International	0.3	2600	95%	3767	95%	3824	93%	4109
Utica	Sevita International	0.4	2625			94%	3757	92%	4061
AAC KOVIK	SG CERESCO inc.	0.6	2650	98%	3892	99%	3951	96%	4253
AYA	Prograin	0.5	2675	99%	3919	102%	4091	106%	4664
MARULA	Prograin	0.6	2700	97%	3840	102%	4078	104%	4573
Malart	SEMICAN INC	0.6	2700					103%	4538
EZRA	Prograin	0.8	2725	104%	4135	101%	4065	106%	4676
HAVANE	SG CERESCO inc.	0.8	2750	100%	3955	101%	4034	95%	4179
Finch	Sevita International	0.9	2750	102%	4036	100%	4001	97%	4262
TAKU	SG CERESCO inc.	1.1	2850	107%	4237	107%	4283	109%	4788
Means					3973		4009		4410
Sites					7		4		2[iii]

Table/Tableu 3: Yield of Roundup Ready Soybeans, 2021-23, 000.5-0.1 (≈2200-2500 CHU/UTM Rendement du Soya resistant au Roundup, 2021-23									
Cultivar	Distributor / Distributeur	Maturity Maturité	CHU / UTM(i)	3 years/ans		2 years/ans		2023	
				(%)	(kg/ha)	(%)	(kg/ha)	(%)	(kg/ha)
Wolf R2X	**Maizex Seeds**	**000.3**	**2100**			87%	3332	88%	2958
S0007-S1X	**Syngenta**	**000.7**	**2225**	84%	3157	78%	2978	75%	2539
S0009-J5X	**Syngenta**	**000.9**	**2250**					92%	3087
Castor R2X	**Maizex Seeds**	**000.9**	**2275**					71%	2391
PS 0011XRN	**PRIDE Seeds**	**00.0**	**2300**			88%	3352	87%	2917
S001-D8X	**Syngenta**	**00.1**	**2300**					91%	3053
DKB001-07	**DEKALB**	**00.1**	**2300**			101%	3860	110%	3703
S003-R5X	**Syngenta**	**00.3**	**2325**	94%	3558	99%	3797	97%	3267
Badger R2X	**Maizex Seeds**	**00.2**	**2350**			101%	3871	103%	3476
P002A42E	**Pioneer**	**00.2**	**2325**					93%	3113
P005A59E	**Pioneer**	**00.5**	**2400**			96%	3656	100%	3358
S007-A2XS	**Syngenta**	**00.7**	**2400**			107%	4101	99%	3346
S007-Z1X	**Syngenta**	**00.7**	**2400**					113%	3788
B0073EE	**Brevant**	**00.7**	**2450**					101%	3398
P007A68E	**Pioneer**	**00.7**	**2450**					101%	3395
DKB007-91XF	**DEKALB**	**00.7**	**2475**					120%	4032
DKB008-48	**DEKALB**	**00 8**	**2475**	105%	3955	105%	4029	105%	3516
PS 0072XR	**PRIDE Seeds**	**00.7**	**2475**			105%	3995	110%	3701
ELMO E3	**Prograin**	**00.7**	**2475**	98%	3689	105%	3993	106%	3581
KUDO R2X	**Prograin**	**00.6**	**2475**	104%	3910	108%	4110	106%	3557
PS 0098XR	**PRIDE Seeds**	**00.9**	**2500**	111%	4185	111%	4228	110%	3715
BRONCO R2X	**Prograin**	**0.0**	**2550**	104%	3939	110%	4191	122%	4112
Means (kg/ha)					3770		3821		3364
Sites					10		7		3[ii]

Table/Tableau 4: Yield of Roundup Ready Soybean, 2021-23, 00.9-0.6 (≈2525-2675 CHU/UTM) Rendement du Soya résistant au Roundup, 2021-23									
Cultivar	Distributor / Distributeur	Maturity Maturité	CHU / UTM[iv]	3 years/ans		2 years/ans		2023	
				(%)	(kg/ha)	(%)	(kg/ha)	(%)	(kg/ha)
S02-M4XF	Syngenta	0.2	2525	88	3602	91%	3539	93%	3349
Tiger E3	Maizex Seeds	0.1	2550					85%	3051
Cobra R2X	Maizex Seeds	0.2	2575	100	4093	102	3949	97%	3489
RICO R2X	Prograin	0.1	2575	99	4066	101	3935	97%	3473
S03-V5E3	Syngenta	0.3	2575			98%	3811	92%	3286
B036CE	Brevant	0.3	2600			92%	3590	94%	3378
Grizzly R2X	Maizex Seeds	0.3	2600	100	4085	102	3954	106%	3817
Barracuda E3	Maizex Seeds	0.3	2600					92%	3305
DONALDO R2X	Prograin	0.2	2600	91	3721	95%	3680	98%	3530
EMILIO E3	Prograin	0.2	2600	94	3846	97%	3770	97%	3480
SALTO R2	Prograin	0.4	2625	100	4090	102	3971	103%	3706
P04A98E	Pioneer	0.4	2625					117%	4208
P04T02E	Pioneer	0.4	2625					83%	2988
PS 0322EN	PRIDE Seeds	0.3	2625			84%	3264	79%	2842
PS 0423EN	PRIDE Seeds	0.3	2625					85%	3038
S04-J6X	Syngenta	0.4	2625	103	4231	105	4070	103%	3689
DKB04-72XF	DEKALB	0.4	2650					107%	3834
PS 0420XRN	PRIDE Seeds	0.4	2650			91%	3542	97%	3493
B043EE	Brevant	0.4	2625					114%	4106
P06A38E	Pioneer	0.6	2675					108%	3892
PS 0521XRN	PRIDE Seeds	0.5	2675	100	4110	103	3995	103%	3686
SI 0620XTN	Sevita International	0.6	2675	104	4238	105	4062	96%	3457
S06-A3XF	Syngenta	0.6	2675			96%	3728	94%	3386
DKB03-25	DEKALB	0.6	2625	107	4393	112	4350	114%	4109
NANO R2X	Prograin	0.6	2700			98%	3810	103%	3683
VERTIGO R2	Prograin	0.8	2700			111	4313	120%	4299
MIKO R2	Prograin	0.8	2700	113	4644	116	4514	122%	4374
Means (kg/ha)					4093		3887		3591
Sites					10		7		3[ii]

Table/Tableau 5: Yield of Roundup Ready Soybean, 2021-2023, 0.7-1.2 (≈ 2700-2850 CHU/UTM) Rendement du Soya résistant au Roundup, 2021-23									
Cultivar	Distributor / Distributeur	Maturity Maturité	CHU/ UTM(i)	3 years/ans		2 years/ans		2023	
				(%)	(kg/ha)	(%)	(kg/ha)	(%)	(kg/ha)
B074HE	Brevant	0.7	2700					109	4102
Lion R2X	Maizex Seeds	0.7	2700			95%	3764	90%	3367
P07T59E	Pioneer	0.7	2700					108	4066
NANO R2X	Prograin	0.6	2700	98	4028	96%	3819	96%	3599
Amino R2X	Prograin	0.6	2700	92	3775	92%	3638	94%	3511
MIKO R2	Prograin	0.8	2750	110	4530	116	4622	121	4556
S07-K5X	Syngenta	0.7	2700	97	4000	98%	3893	95%	3558
DKB07-59XF	DEKALB	0.7	2725			111	4394	113	4243
P08A44E	Pioneer	0.8	2725					106	3981
ENYO E3	Prograin	0.8	2750	98	4043	99%	3944	99%	3725
DKB07-23	DEKALB	0.8	2700					92%	3440
Viper R2X	Maizex Seeds	0.9	2750	108	4472	109	4320	106	3991
PS 0779XRN	PRIDE Seeds	0.7	2750	101	4158	104	4127	99%	3735
B103EE	Brevant	1	2775					88%	3320
PS 0944XRN	PRIDE Seeds	0.9	2775					113	4239
S09-B5XF	Syngenta	0.9	2775					101	3774
B119KE	Brevant	1.1	2800			89%	3548	99%	3703
Pico R2X	Prograin	0.9	2775	97	3982	96%	3829	97%	3651
S10-W8XF	Syngenta	1.0	2800					89%	3331
P12T94E	Pioneer	1.2	2825			90%	3594	89%	3353
S12-M5X	Syngenta	1.2	2825			101	4148	96%	3600
Means (kg/ha)					4124		3972		3755
Sites					9		6		3(ii)

CHU = Corn Heat Unit / UTM = Unité thermique maïs

Annapolis Valley, NS, Harrington, PEI, & Hartland, NB

Annapolis Valley, NS & Harrington,

ELEVATING SOYBEAN PRODUCTION IN PRINCE EDWARD ISLAND: THE ROLE OF SULFUR IN YIELD AND PROTEIN ENHANCEMENT

By: Dan MacEachern, AAFC

The comprehensive study undertaken by the Charlottetown Research and Development Centre from 2017 to 2019 delved into the effects of nitrogen topdressing, with a keen focus on sulfur's role, on soybean crops on Prince Edward Island. This research evaluated the impact of various nitrogen sources—including Ammonium Nitrate (34-0-0), Ammonium Sulfate (21-0-0-24S), and Urea (46-0-0)—applied at 30, 50 and 70 Kg N ha-1 at key growth stages (R1 and R3). This resulted in a total of 18 treatment combinations not including the control (no N top-dress) to assess their impact on soybean yield and protein.

The findings from this structured three-year study offer insights into optimizing fertilization practices for the benefit of soybean cultivation in the region.

Focused Findings on Yield and Protein Content:

Yield Enhancement through Targeted Sulfur Application: The study highlighted a significant 15.5% yield improvement (440 kg ha-1), with the application of Ammonium Sulfate (AS) at the R3 growth stage. The rate of sulfur associated with the yield increase was 34 kg S ha-1(AS applied at 143 kg ha-1) Beyond this rate, yield benefits diminished as S rate increased, yet still produced yields significantly higher than the control (Fig. 1). This optimal application not only underscores the importance of sulfur in the fertilization mix but also demonstrates how both the rate and timing of application critically influence soybean yield.

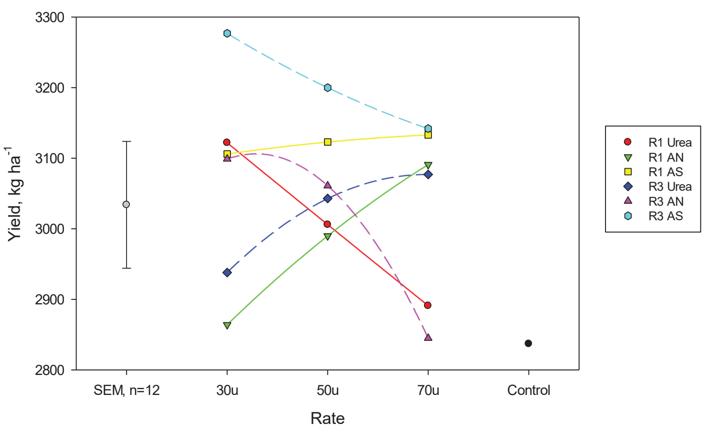


Figure 1. *Plot yield as a result of three N fertility rates, three N fertility sources and two N fertility application timings. P = 0.027*

Protein Content Increase: The application of Ammonium Sulfate (AS) significantly impacted soybean protein content, particularly when applied at a rate of approximately 240 kg ha-1, which supplied 50 kg ha-1 of N and 57 kg ha-1 of sulfur in the form of sulfate (Fig. 2). This optimization was evident across both key growth stages, R1 (beginning bloom) and R3 (beginning pod), with the most pronounced benefits observed at the R3 timing (Fig.3) . Notably, sulfate applied at this rate resulted in an average seed protein content increase of approximately 1.3 percentage points higher than the control which received no nitrogen top-dress.

Despite soil sulfur levels averaging approximately 16 ppm within the study site, the strategic application of sulfur-rich fertilizers like ammonium sulfate at specific growth stages proved essential for achieving significant improvements in both soybean yield and quality.

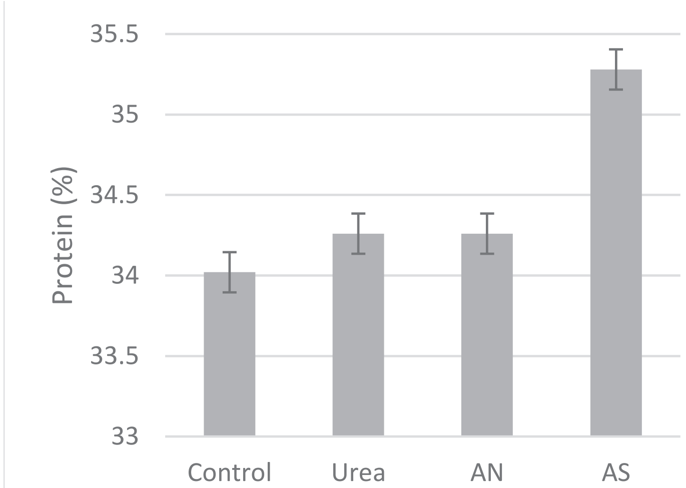


Figure 2. *Percent protein relative to nitrogen source applied via top-dress. P<0.001*

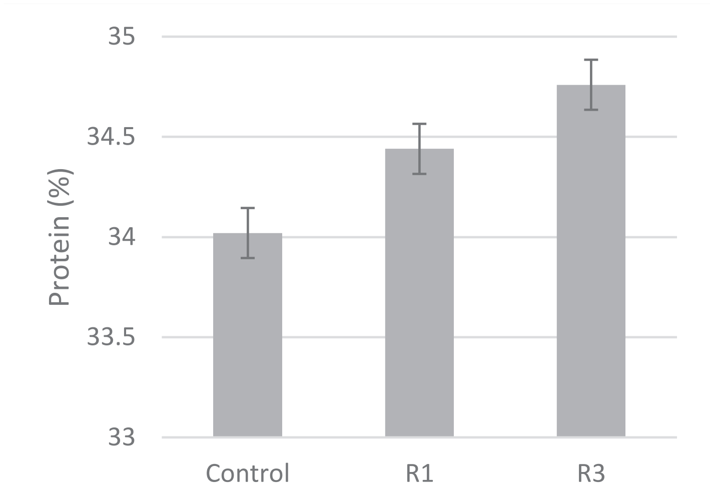


Figure 3. *Percent protein relative to growth stage that fertility top-dress was applied. P=0.016*

Monitoring Soil pH with Sulfur Applications: As soybean producers consider integrating sulfur into their fertilization regimes to improve yield and protein content, monitoring soil pH levels becomes imperative. Different sulfur sources can have varied impacts on soil acidity. Notably, organic sulfur sources can lower soil pH more swiftly than sulfate forms. This distinction underscores the need to choose sulfur sources wisely, tailored to the specific soil conditions and agricultural goals of each farm. Through regular soil testing, farmers can fine-tune their fertilization approaches to maintain optimal soil health and crop performance, ensuring that the incorporation of sulfur into their practices enhances soybean production without negatively affecting soil quality.

YOUR LEVY DOLLARS AT WORK – 2023 RESEARCH UPDATE

Courtney Blois, P. Ag, LP Consulting

2023 Research

2023 provided several challenges for on farm research in Atlantic Canada, mostly in the form of precipitation. An unseasonably dry spring was followed by a record breaking wet summer in most of the region.

Some of the work undertaken in 2023 were brand new protocols and others were updated protocols building from previous research trials.

Research trials completed in 2023 included: corn fertility trials, a soybean rolling trial, a winter wheat seeding rate/timing trial and a barley nitrogen trial.

Corn Fertility Trial – Alpine K19-S

This is the first year for this trial and there were three sites, one in NS and two in PEI.

K19-S is an Alpine foliar product 0-0-16+6S providing potassium and sulfur designed to be added to a UAN tank mix.

The protocol consisted of two treatments:

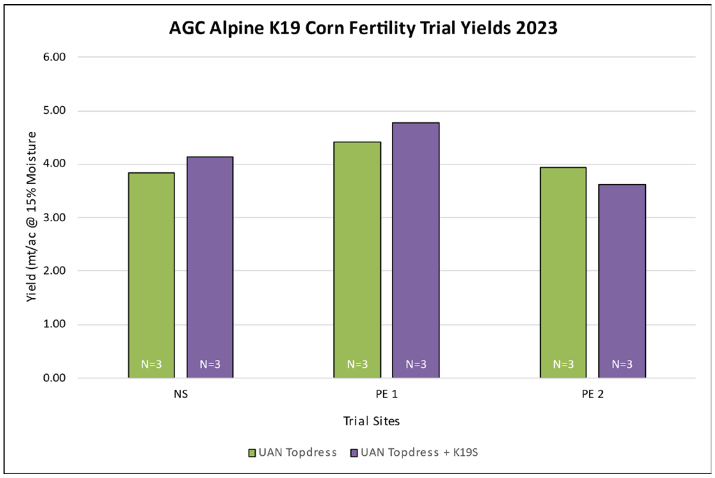
- Control: UAN applied at topdress
- 4L/ac K19-S tank mixed with UAN topdress.
- Each treatment had the same total fertility applied except the K19-S.
- Topdress was applied at the 4-6 leaf stage.

Plant tissue samples were collected at tassel and the K19-S increased the potassium by 0.2% in two of three fields, however, there was no statistical trend. There was no difference in the sulfur results.

At two out of three sites there was an increase in yield with the addition of K19-S. There was no difference in percent protein, test weight or TKW.

There are not enough sites yet to determine if there is a statistical significance from the addition of K19-S.

Soil potassium levels collected post trial were medium to high, and soil sulfur levels were low to optimum.



More sites are required to determine significant yield and return on investment benefits from using this product.

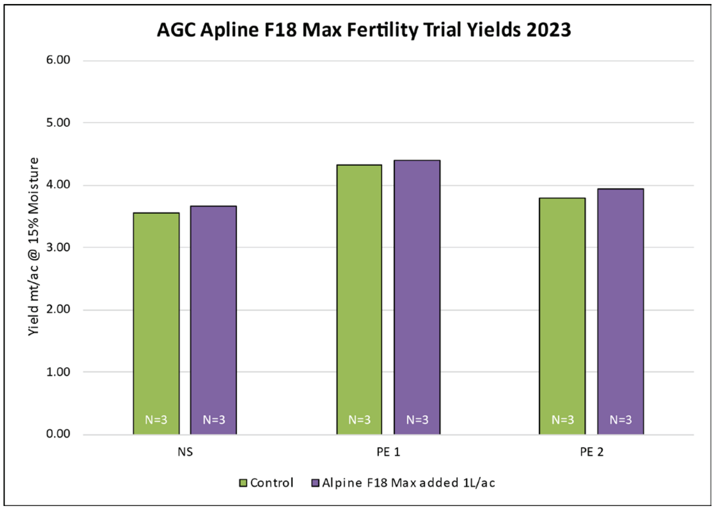
Corn Fertility Trial – Alpine F18 Max

This is the first year for this trial and there were three sites, one in NS and two in PEI.

F18 Max is an 8-4-6 foliar fertilizer which also applies 1% manganese and 1% zinc. +

The protocol consisted of two treatments:

- Control: Regular corn fertility
- Regular corn fertility + 1L/ac F18 Max applied with post emergence herbicide.
- Each treatment had the same total fertility applied except the F18 Max.



Plant tissue samples were collected at tassel and there was no difference in the tissue results for any nutrients added in the F18 Max.

At all three sites there was a slight increase in yield with the addition of F18 Max. There was no difference in percent protein, test weight or thousand kernel weight.

There are not enough sites yet to determine if there is a statistical significance from the addition of F18 Max.

Moist conditions in 2023 caused difficulty in harvest timing and many corn fields to become moldy, potentially skewing results.

More sites are required to determine significant yield and return on investment benefits from using this product.

Soybean Rolling Trial

In 2021 and 2022, the rolling trial consisted of three treatments:

- Rolling Before Planting
- Rolling After Planting
- Rolling Before and After Planting

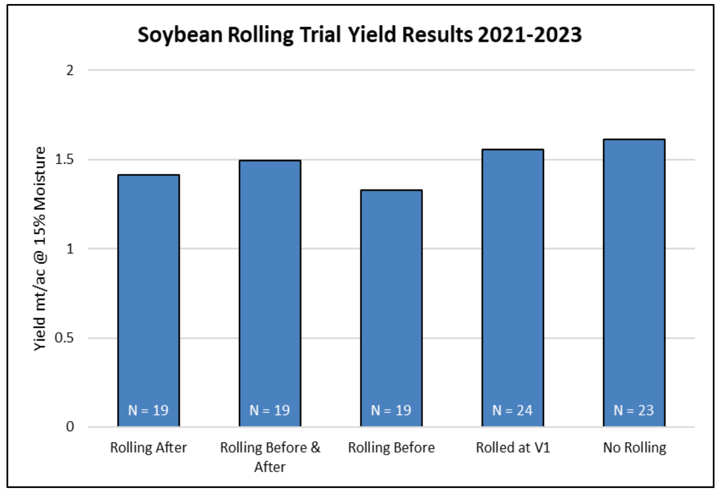
This trial was preformed at 19 sites in NS, NB and PEI over two years. Results indicated that there was no yield benefit to rolling before or after seeding. If your field conditions require rolling, roll. If physical field conditions to not require rolling, there will be no yield benefit in doing so.

In 2023, the protocol was updated to look at rolling soybeans after emergence. There had been varying results outside the Maritime region on the success of rolling at the first trifoliate. In theory, it was supposed to cause a stress reaction in the plant and promote branching, thus increasing yield.

In 2023 the trial consisted of two treatments:

- Control – not rolled.
- Rolled at first trifoliate (in the afternoon)

The trial was implemented at 22 sites in NS, NB and PEI in 2023.



Results from the first year do not show a yield increase from rolling.

The statistical analysis of the soybean rolling trials from 2021 – 2023 consistently show a more significant change in yield based on previous crop rotation than from rolling practices.

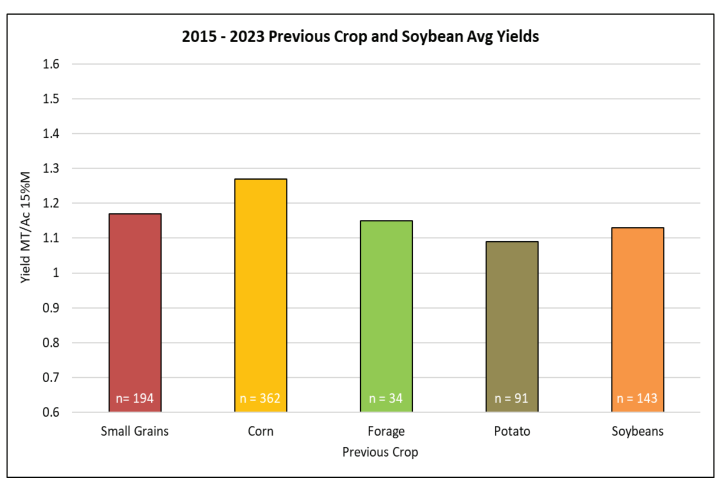
The yield results from all soybean trials implemented from 2015 – 2023 show the rotation type and previous crop have a larger difference in yield than treatments

. The crop grown in the previous year impacted soybean yields differently than the rotation type.

Soybeans grown following corn showed the highest yields, while soybeans grown after potatoes showed the lowest yields.

There is a statistically significant difference in yield based on previous crop.

The rotation effect will continue to be documented in further on farm soybean research.



Winter Wheat Seeding Rate/Timing

2023 was the third year of harvesting winter wheat seeding rate and timing trials. The purpose of the trial was to determine if increasing seeding rate can compensate for late planting.

The protocol consisted of four treatments:

- Target seeding date of September 10th – seeding rate of 1.7 million seeds/ac.
- Target seeding date of September 25th – seeding rate of 1.7 million seeds/ac.
- Target seeding date of October 10th – seeding rate of 1.7 million seeds/ac.
- Target seeding date of October 10th – seeding rate of 2.1 million seeds/ac.

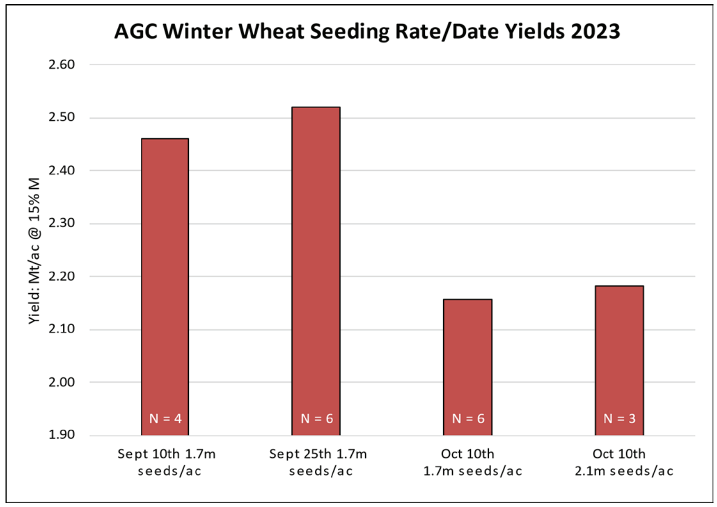
There was a significant difference in yields at different seeding dates, with earlier seeding dates yielding higher than late seedings. There was a no significant difference between seeding rates, although a trend of slightly higher yield was seen by increasing the seeding rate in October.

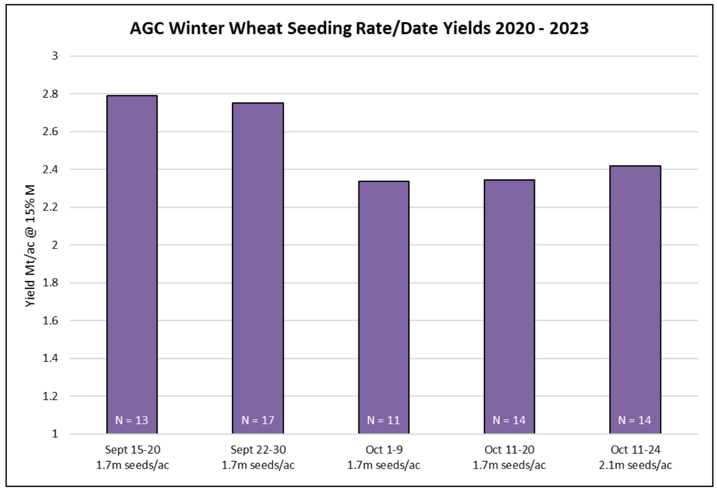
Each year due to weather the seeding dates are slightly altered. When grouping the seeding dates for all three years of the trial, a decrease in yield with a later planting is still visible. Although this is increased slightly with a higher seeding rate, this does not make up for the lost yield from a late planting.

Delaying planting by 1-2 weeks can cost $135/ac at same seeding rate. If delayed planting is necessary, increase seeding rate. Delaying planting by 4 weeks can cost $111/ac, even with higher seeding rate. However, there is an ROI by increasing seeding rate for late planting.

To maximize yield, plant winter wheat in early September. If harvest of previous crop is late, or weather is uncooperative for early planting, increasing seeding rate will increase yield over late planting at a low seeding rate.

	Sept 15-20 1.7m	Sept 22-30 1.7m	Oct 1-9 1.7m	Oct 11-20 1.7m	Oct 11-24 2.1m
Seed Cost/ac	$ 154.13	$ 154.13	$ 154.13	$ 154.13	$ 190.40
Value of Yield/ac ($300/tonne)	$ 836.95	$ 825.31	$ 701.08	$ 702.73	$ 725.56
Net	**$ 836.95**	**$ 825.31**	**$ 701.08**	**$ 702.73**	**$ 725.56**





Barley Nitrogen Application

The previous barley nitrogen trial which ran from 2019-2022 had four treatments:

- 80lbs/ac N – urea at planting
- 80lbs/ac N- urea split preplant/top-dress 50/50
- 80lbs/ac N- ESN (environmentally smart nitrogen)/Urea applied at planting.
- 80lbs/ac N – Urea + DCD (non leaching agrotain) applied at planting.

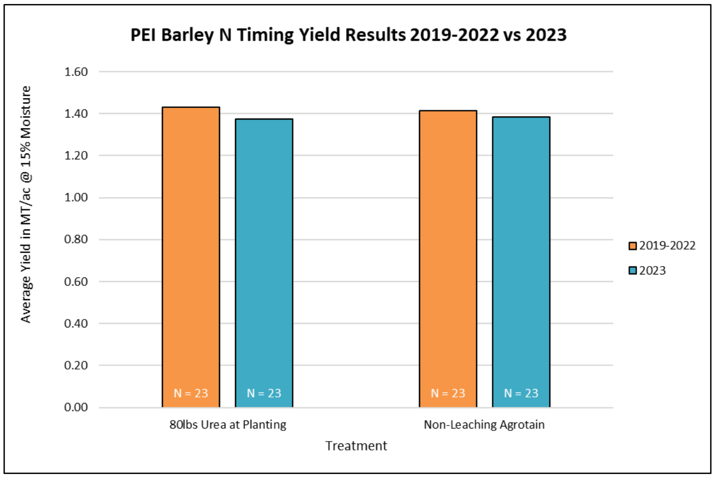
The results from this trial showed that there was not statistically significant increase nor decrease in yield from using the protected nitrogen products. While using protected nitrogen products did not cost producers yield, it did not increase the return on investment in the crop enough to account for the additional cost of the protected nitrogen products.

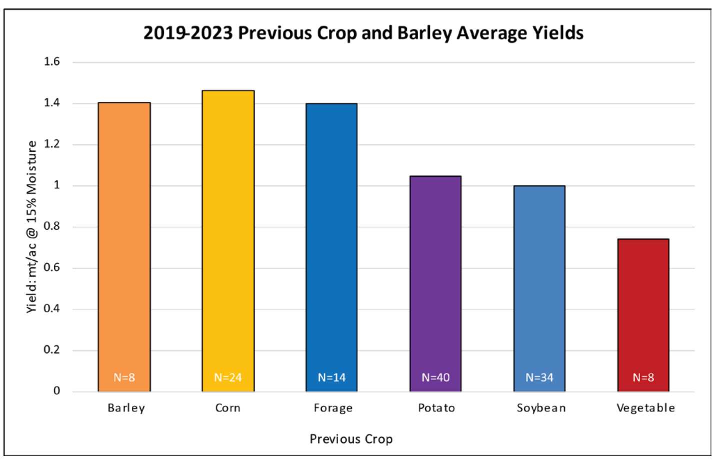
In 2023 the protocol included two treatments:

- 80lbs/ac N – urea at planting
- 80lbs/ac N – Urea + DCD (non leaching agrotain) applied at planting.

There was no significant difference in yield between the two treatments in 2023.

With the 10 sites on PEI in 2023, this makes a total of 37 sites in the Maritimes over five years for these two treatments. Twenty three of these sites were on PEI.





The 2023 yields showed similar results to the 2019-2022 results from the trial sites on PEI.

No trial year showed significant difference in yield by treatment.

Weather may have been a factor, but it did not result in a significant difference in yield.

Previous crop had a bigger impact on yield than nitrogen stabilizers.

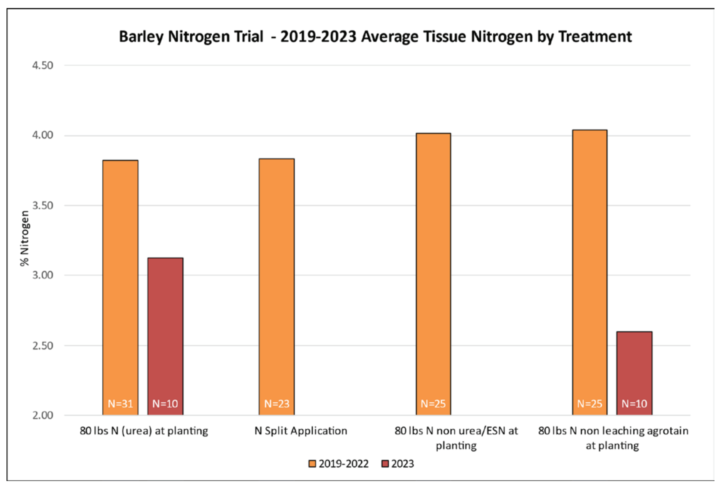
Tissue samples were taken from each treatment prior to flowering. Tissue results from 2019-2022 showed higher levels of nitrogen in ESN and DCD treatments.

In 2023 the urea only treatment showed higher tissue nitrogen than the DCD treatment.

Further research including monitoring nitrogen leaching and nitrification is required to examine the benefits of these products in reducing greenhouse gas and carbon emissions.

2024 On Farm Agronomy Trials

As we move into a new cropping year, and the Sustainable Canadian Agricultural Partnership funding window, we are eager to get started on new research projects and continue building on the knowledge gained from existing protocols. Data specific to Atlantic Canada is important in helping local producers make on farm decisions.



YIELD ENHANCEMENT NETWORK (YEN) – RECOGNITION

On March 5, 2024, the Atlantic Grain Council hosted the fifth YEN Award meeting at the Evermoore Brew Pub in Summerside PEI. Recognized were producers from across New Brunswick, Nova Scotia and Prince Edward who did an outstanding job in managing their wheat, barley, oat, and soybean crops. YEN is a joint effort of the participating farmers, Agriculture and Agri-Food Canada (AAFC), and the Atlantic Grain Council, which highlights the importance of sharing information to improve both on-farm and regional combinable crop productivity. This year 109 fields

AGC Chair Roy Culberson is joined by the 2024 participants at the annual award banquet (L-R, Eric Theriault, Mike Lidstone, John Vos, Leonard McIsaac, Kyle Jewell, Joey Van de Riet, Niels Langelaan, Pat Murray, and Darryl Wilkie).

were entered, 11 were withdrawn before harvested leaving 98 fields in the competition.

The Awards are in three categories for each of the five crop kinds: winter wheat, spring wheat, barley, oats, and soybeans. The first category is for the highest recorded total yield in metric tonnes per acre (t/ac). The second category is for highest potential yield, calculated by comparing the actual crop yield to the calculated potential yield based on a crop model implemented by AAFC which considers crop type, applied management, soil attributes and weather, and is reported as a percentage of potential. The third category, which applies only cereals, looks at how efficiently applied nitrogen was converted to harvested crop and is reported as kilograms of grain per kilogram of applied nitrogen (kg grain/kg of N).

Despite the challenging cereal growing conditions in 2023, YEN growers were able to achieve yields much higher than provincial averages in all crops measured. Kyle Jewell was able to achieve the highest overall (HOA) yield of 3.7 t/ac. This high level of achievement is a testament to the enlightened management approach practiced by YEN participants in every Maritime province.

Changes to the modelling approach in 2023 build in more of the grower's management information in order to get a better handle on what potential yields in the region were. For the first time, growers were able to achieve 100% of yield potential. With the more robust model, researchers at AAFC will be able to better identify what yield limiting factors are for the region.

The 2024 growing season will see the official addition of a soybean category. Data were collected in 2023 as a pilot to identify yield components and to determine the feasibility of adding this new crop. Of the soybean pilot farms selected, Anthony Nabuurs was able to achieve an exceptional yield just over 2.0 t/ac in Eastern PEI. In the Western part of the Island, Daryll Wilkie was able to realize 100% of his soybean yield potential. These results show that the possibility is there to improve soybean yields in the region.

For information regarding participation in the 2024 Yield Enhancement Network please contact: Heather Russell, Atlantic Grains Council heather@atlanticgrainscouncil.ca 506-380-9663 or Aaron Mills, Agriculture and Agri-Food Canada aaron.mills@canada.ca 902-314-7949.

BARLEY

Overall Yield

	Province	Farm	Yield	Variety
Gold	PE	Kyle Jewell	2.364	AAC Ling
Silver	NB	Eric Theriault	2.256	Esma
Bronze	PE	Kevin Hunter	2.038	AAC Purpose

			% of Potential	
Gold	PE	Kyle Jewell	100%	AAC Ling
Silver	PE	Kevin Hunter	90%	AAC Purpose
Bronze	NB	Eric Theriault	87%	Esma
NITROGEN USE EFFICIENCY	NB	Eric Theriault	59 kg of grain per kg N	Esma

OAT

Overall Yield

	Province	Farm	Yield	Variety
Gold	NB	Eric Theriault	1.830	CS Camden
Silver	NB	Rob Culberson	1.752	CS Camden
Bronze	NB	Chris Toner	1.747	CS Camden

% of Potential

Gold	NB	Eric Theriault	67%	CS Camden
Silver	NB	Chris Toner	62%	CS Camden
Bronze	NB	Rob Culberson	58%	CS Camden
NITROGEN USE EFFICIENCY	NB	Chris Toner	78 kg of grain per kg N	CS Camden

SPRING WHEAT

Overall Yield

	Province	Farm	Yield	Variety
Gold	PE	Troy Webster	1.872	AC Scotia
Silver	PE	Len McIsaac	1.762	AC Walton
Bronze	NB	Eric Theriault	1.686	AAC Maurice

% of Potential

Gold	NB	Len McIsaac	82%	AC Walton
Silver	PE	Troy Webster	79%	AC Scotia
Bronze	PE	Eric Theriault	79%	AAC Maurice
NITROGEN USE EFFICIENCY	PE	Troy Webster	37 kg of grain per kg of N	AC Scotia

WINTER WHEAT

Overall Yield

	Province	Farm	Yield	Variety
Gold	PE	Kyle Jewell	3.663	25R74
Silver	NS	Niels Langelaan	3.247	25R61
Bronze	PE	Pat Murray	2.92	25R74

% of Potential

Gold	NS	Kyle Jewell	98%	25R74
Silver	PE	Niels Langelaan	94%	25R61
Bronze	NS	Joey Van de Riet	84%	25R61
NITROGEN USE EFFICIENCY	NS	Joey Van de Riet	54 kg of grain per kg of N	25R61

SOYBEAN

Overall Yield

	Province	Farm	Yield	Variety
Gold	PE	Anthony Nabuurs	2.072	NK S04D3
Silver	PE	Kyle Jewell	1.838	P06A38E
Bronze	PE	Melvin Ling	1.614	DKB 008-48

% of Potential

	Province	Farm	% of Potential	Variety
Gold	PE	Daryl Wilkie	100%	Savana
Silver	PE	Anthony Nabuurs	97%	P06A38E
Bronze	PE	Kyle Jewell	85%	Savana

CEREAL AND SOYBEAN PROFILE – CANADA AND THE MARITIMES

Estimated Field Crops Area, Production and Value[1] - Canada and Maritimes, 2023

Crop	Acres/Production Value	Canada	New Brunswick	Nova Scotia	Prince Edward Island	Maritimes
Wheat	Area ac	26,396,500	7,600	5,500	31,500	44,600
	Production t	31,954,115	8,704	10,602	54,870	74,176
	$ Value	13,321,440,250	3,046,400	3,710,700	19,204,500	25,961,600
Oats	Area ac	2,032,700	25,600	1,800	4,800	32,200
	Production t	2,635,574	27,732	1,882	4,290	33,940
	$ Value	975,162,380	10,260,840	696,340	1,587,300	12,544,480
Barley	Area ac	6,669,600	13,900	1,500	46,600	62,000
	Production t	8,896,244	16,478	1,762	53,752	71,992
	$ Value	3,024,722,960	5,602,520	599,080	18,275,680	24,477,280
Corn	Area ac (Grain)	3,753,200	7,300	17,700	14,700	39,700
	Production t	15,075,930	25,481	48,607	50,866	124,954
	Area ac (Silage)	729,400	6,900	10,200	7,800	24,900
	Production t	11,728,625	79,168	128,245	103,843	311,256
	$ Value[2]	3,467,463,900	5,860,630	11,179,610	11,699,180	28,739,420
Soybean	Area ac	5,587,600	7,300	11,900	31,600	50,800
	Production t	6,980,525	8,316	16,032	38,734	63,082
	$ Value	4,327,925,500	5,155,920	10,107,240	24,015,080	39,278,240

1Data derived from Statistics Canada Table 32-10-0359-01, released December 4, 2023, and Agriculture and Agri-Food Canada's Canada: Outlook for Principal Field Crops released December 15, 2023.
2Value only reported for corn harvested as grain.

Maritime field crop production valued at $131 million in 2023.

MARKET OUTLOOK FEBRUARY 29, 2024

Neil Campbell, General Manager PEI Grain Elevators Corporation

Some thoughts as we move forward into a new planting season here in Atlantic Canada, with some cautious optimism again for future prices of our crops. It is difficult to understand all the market influences in every marketing year, but there are several things to consider for a successful marketing plan. Rotation, input costs, seed availability, Canadian dollar and of course demand for your commodity long term are all things to evaluate.

After a difficult growing/ harvest season in Atlantic Canada its now apparent that this year the harvest prices certainly were the high of the marketing year so far. As the world markets have adjusted to the political unrest and wars overseas, our prices have dwindled away to 2018 winter price levels. US grain and oilseed markets have posted historic declines so far this year with the recovery of global supplies, and prices have slowly but steadily declined.

Ukraine is exporting a large amount of old crop Corn around the world and Russia is exporting the cheapest wheat into the world market. Overall, the stocks to use ration for Soybeans is at 7 weeks, Corn is at 15 weeks and Wheat is at 34 weeks. So, the market is saying that supplies are comfortable for now, but this can change quickly. For now, the funds have bet heavily on the short side of the market as Soybeans / Corn are record short as of now. So, if there are issues with inventories in the next marketing year the market will bounce quickly and dramatically.

It is quite evident that markets don't care about higher imput costs for producers. The preferred crop this year might be the one that uses the least costly imputs to grow. Here in the Atlantic region, we are affected by the larger world markets as well as local factors. The traditional outlet for most of our products is still local livestock. Locally there is lots of grain to sell out of producer's tanks at this time, but wheat and barley inventories will be low by harvest. Our biggest competition right now is rail product from upper Eastern Canada as we have lots of Corn in tanks to sell but need to compete with product being imported into Atlantic region in very large quanties. So, as we look forward, we have lots of time to market 2024 plantings.

Hopefully, some weather issues or increased demand will help our prices. Dryness is still a major concern in Western Canada and the Mid-West United Sates. It is certainly too early to tell what the American farmers will plant, but early indications are that Soybeans have the profit edge over Corn at this time, but Corn will still be king in the USA biggest yielding states. The other factor is our Canadian dollar, which is moving sideways around 74 cents, fairly consistent the last 6 months and doesn't show signs of moving dramatically either way. The increasing interest rates did not seem to have affected its value as much as previously thought. A positive for Agriculture will be if the USA has more demand this spring and summer for ethanol and biodiesel. There are certainly signs that Soybean meal has lots of demand and could spark the rally on Soybeans. The Soft Red Wheat market stocks maybe tight as lots of acres didn't get planted into the wet soil last fall in all of Eastern / Atlantic Canada.

Remember quality always sells first and Incremental selling through the marketing year is a good way to avoid the all or nothing strategy. Selling at a profit is always a good thing.

Have a safe planting and profitable marketing year...

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ATLANTIC GRAINS COUNCIL 381 Killam Drive, Moncton, NB E1C 3T1
Telephone: 506.380.9663 ▪ Email: heather@atlanticgrainscouncil.ca ▪ www.atlanticgrainscouncil.ca