



Testing AnneMaxx™ Products in Canola, Wheat, and Peas Production in Lethbridge, Alberta in 2024-2025 Research Project 1 – Final report

Abstract

Field trials conducted in 2024-2025 in Lethbridge, AB evaluated the agronomic performance and economic viability of AnneMaxx™ (Annelida) products under reduced-fertilizer regimes for wheat, canola, and peas.

The experiments employed a randomized complete block design with four replications, testing granular and liquid formulations at 75% and 65% of recommended fertilizer rates vs. 100% fertilizers (control), with and without a foliar spray of AnneMaxx™ Advantage & Enhance Plus.

Across all crops, granular treatments delivered 90% of trials with yields equal to or above the control, 80% of trials with positive Return on Investment (ROI), with an average ROI of 223%. Granular + foliar treatments achieved 100% of trials with yields equal to or above the control, 80% of trials with positive ROI, with an average ROI of 175%. Liquid treatments produced 100% of trials with yields equal to or above the control, 83% of trials with positive ROI, with an average ROI of 198%. Liquid + foliar treatment resulted in 67% of trials with yields equal to or above the control, 50% of trials with positive ROI, with an average ROI of -2%. Overall, the findings indicate a reasonable trade-off between upside and reliability. Granular treatments provided the highest potential ROI, but failed in 20% of trials, while liquid treatment offered more consistent profitability with the strong average ROI.

The results showed that applying AnneMaxx™ products with reduced-fertilizer rates can markedly improve both agronomic performance and profitability of wheat, canola, and peas in Southern Alberta.

Introduction

Field trials of Annelida products are required to obtain objective efficacy data that can support sales, marketing, and regulatory submissions. This program comprised small-plot trials on locally important crops, conducted by independent third-party growers in Canada.

Goal

To evaluate the impact of AnneMaxx™ products on the yield of canola, wheat, and peas in Alberta in 2024-2025.

Materials and methods

The trials were contracted with DSW Enterprises and Consulting and performed by Hamman Ag Research in accordance with its standard agronomic protocols.

The study was planted in Lethbridge (near Kipp), Alberta, in 2024 and 2025.

Two groups of treatments were evaluated – granular and liquid products.

The treatments in the granular group were:

1. Control – 100% of recommended fertilizers:
 - a. Canola: 100-50-0-10 (N-P-K-S respectively, lb/ac),
 - b. Wheat: 100-50-0-10 (N-P-K-S respectively, lb/ac),
 - c. Peas: 20-52-0-10 (N-P-K-S respectively, lb/ac).
2. 75% of recommended fertilizers + AnneMaxx™ Biome applied in furrow at 10 kg/ac.
3. 65% of recommended fertilizers + AnneMaxx™ Biome applied in furrow at 10 kg/ac.
4. 65% of recommended fertilizers + AnneMaxx™ Biome applied in furrow at 10 kg/ac + foliar application of AnneMaxx™ Advantage at 3 l/ac + AnneMaxx™ Enhance Plus at 1l/ac to the total mix of 4l/ac at the typical herbicide spraying time.

For brevity, the granular treatments are referred to as:

1. 100 % fertilizers
2. 75% + granular
3. 65% + granular
4. 65% + both (granular and foliar)

The treatments in the liquid group were:

1. Control – 100% of recommended fertilizers.
2. 75% of recommended fertilizers + AnneMaxx™ Advantage at 3 l/ac + AnneMaxx™ Enhance Plus at 1l/ac to the total mix of 4l/ac applied to the furrow at planting
3. 65% of recommended fertilizers + AnneMaxx™ Advantage at 3 l/ac + AnneMaxx™ Enhance Plus at 1l/ac to the total mix of 4l/ac applied to the furrow at planting.
4. 65% of recommended fertilizers + AnneMaxx™ Advantage at 3 l/ac + AnneMaxx™ Enhance Plus at 1l/ac to the total mix of 4l/ac applied to the furrow at planting +

foliar application of AnneMaxx™ Advantage at 3 l/ac + AnneMaxx™ Enhance Plus at 1l/ac to the total mix of 4l/ac at the typical herbicide spraying time.

For brevity, the liquid treatments are referred to as:

1. 100% fertilizers
2. 75% + liquid
3. 65% + liquid
4. 65% + both (liquid and foliar)

The grower followed the typical growing practices for the area. The experimental design was a Randomized Complete Block Design (RCBD) with four replications and two repetitions. Each plot measured 4 m x 8 m and was planted in two passes (subplots) of eight rows, giving a total of sixteen rows per plot.



Figure 1. General view of trials, 2025

Assessments

1. Early-season visual stand – visual rating expressed as a percentage (0–100 %).
2. Stand count at full emergence – plants counted along a 1 m segment of the two inner rows in the centre of each plot and reported as plants/m².
3. Phytotoxicity – percent visual reduction in biomass relative to the untreated control, assessed 14 days after the foliar application.
4. Days to flowering – recorded as notes or observations when phenological differences became apparent.
5. Yield at maturity – six rows were harvested from each subplot, providing two yield measurements per plot (the two repetitions). These values were averaged and expressed in lb/ac and bu/ac, corrected to standard moisture.
6. Other notes, measurements, and observations were collected by Annelida.

Data analysis

The data were analyzed using an ANOVA (Analysis of Variances) method for RCBD. Treatments were used as fixed factors. The responses were yield and other measurements. The effects of replications were attributed to the error term for the variance. The least-significant-difference (LSD) was computed at $P < 0.05$ and is displayed as error bars on the graphs.

Return-on-investment (ROI) calculations were based on the following cost and revenue assumptions:

- Fertilizer costs – Canola \$160/ac, Wheat \$140/ac, Peas \$110/ac.
- AnneMaxx™ product prices – Advantage (3 L/ac) + Enhance Plus (1 L/ac) at a manufacturer's suggested retail price (MSRP) of \$21/ac; Biome at \$27/ac.
- Commodity market prices – Canola \$0.62/kg, Wheat \$0.26/kg, Peas \$0.45/kg.

These parameters were used to estimate net returns for each treatment by comparing the additional revenue generated from yield gains against the incremental input costs of reduced fertilizer rates and AnneMaxx™ applications.

Results and Discussion

In all crops, plant emergence and stand establishment were statistically indistinguishable among all treatments in both years. No treatment altered the percentage of seedlings that survived to the full-season stand. The foliar spray also caused no observable phytotoxicity, and flowering time remained unchanged across the five regimes.

Wheat – granular treatments

Visually, the wheat plots receiving the granular treatments appeared comparable to the control (100 % fertilizer) with no discernible differences in canopy development or plant density. In contrast, the plot that received the additional foliar application exhibited slightly enhanced plant vigor, manifesting as a marginally greener and more robust stand relative to the other treatments (Fig. 2).



100% fertilizers



75% + granular



65% + granular



65% + both (granular and foliar)

Figure 2. Visual appearance of wheat by granular treatments, 2025

The 75% + granular treatment produced a marginally higher yield of 57 bushels per acre (~1.8 % increase) compared to untreated control, though the gain was not statistically significant. Economically, the treatment saved \$35 per acre on fertilizer while incurring a

\$27 per acre cost for the product, resulting in a net benefit of \$15.08 per acre and a return-on-investment of 56% (Fig. 3).

The 65% + granular treatment matched the control by yield. Nevertheless, the larger fertilizer savings generated a higher net saving of \$22 per acre and an ROI of 81%, the most favorable among the granular options (Fig. 4). This demonstrates that in 2024 Biome helped sustain yields while allowing a deeper fertilizer cut, thereby improving profitability without compromising statistical yield performance (Fig. 3-4).

The 65% + both (granular and foliar) treatment reduced the yield to 54 bushels per acre, a loss of about two bushels (~3.6%), though statistically was similar to the control. Although the fertilizer saving remained \$49 per acre, the extra foliar inputs raised the total AnneMaxx™ cost to \$48 per acre, resulting in a net loss of \$13.15 per acre and a negative ROI of -27%. The data therefore suggest that the foliar addition did not offset its cost under the tested conditions and eroded both yield and economic performance. In our experience, these results are typical for environments with high fertilization levels.

Overall, the granular results indicated that fertilizer reduction (to 75% or 65%) coupled with the AnneMaxx™ Biome could preserve or modestly improve wheat yield while delivering substantial cost savings, with yields statistically indistinguishable from the control. In contrast, the inclusion of the foliar Advantage & Enhance Plus package proved counterproductive, leading to a negative financial return (Fig. 4).

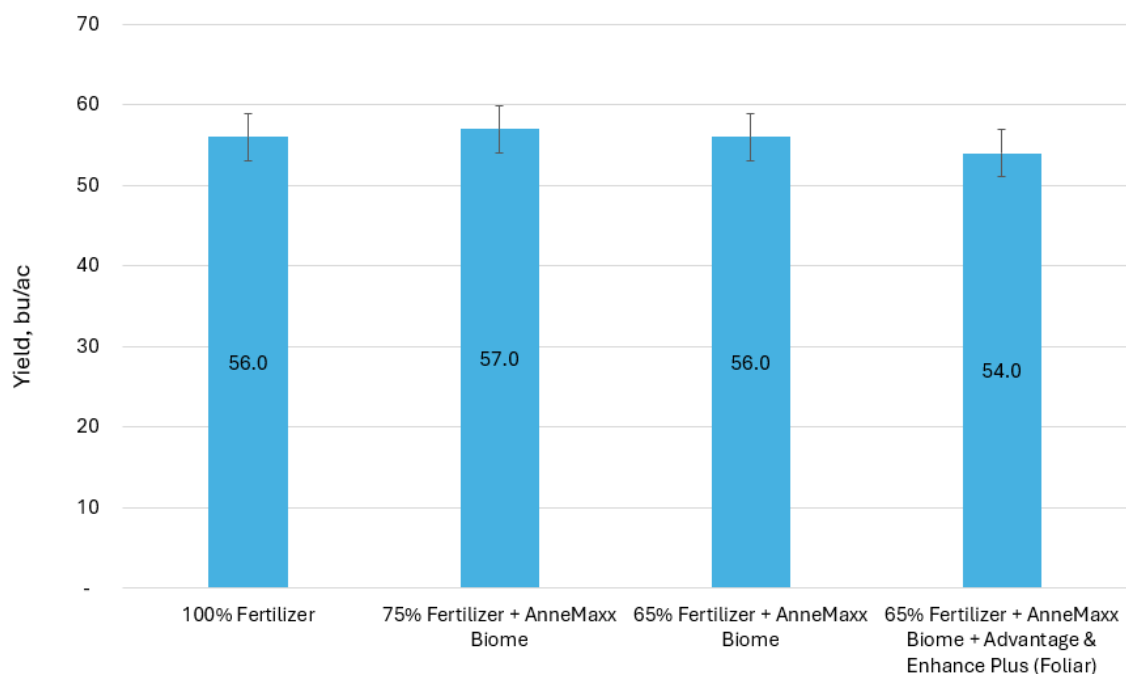


Figure 3. Yield of wheat by granular treatments, 2024

Figure 4. ROI in wheat by granular treatments, 2024

Parameter	75% Fertilizer + AnneMaxx Biome	65% Fertilizer + AnneMaxx Biome	65% Fertilizer + AnneMaxx Biome + Advantage & Enhance Plus (Foliar)
Fertilizer savings, \$/ac	35.00	49.00	49.00
AnneMaxx cost, \$/ac	27.00	27.00	48.00
Yield gain, \$/ac	7.08	0.00	-14.15
Savings, \$/ac	15.08	22.00	-13.15
ROI, %	56%	81%	-27%

In 2025, the 75% + granular treatment generated a yield gain of \$22.08 per acre (Fig. 5), raising the net savings to \$30.08 per acre and delivering an ROI of 111% (Fig. 6). This represented a substantial improvement over the 56% ROI observed for the identical treatment in 2024, indicating that the 2025 season’s agronomic conditions amplified the benefit of Biome.

The 65% + granular treatment achieved a yield gain of \$27.03 per acre, net savings of \$49.03 per acre, and an ROI of 182%. i.e. more than double the 81% ROI recorded the previous year. The larger ROI stemmed from both a higher absolute yield increase and the unchanged fertilizer-cost reduction, suggesting that the Biome formulation performed exceptionally well under the 2025 conditions (Fig. 5-6).

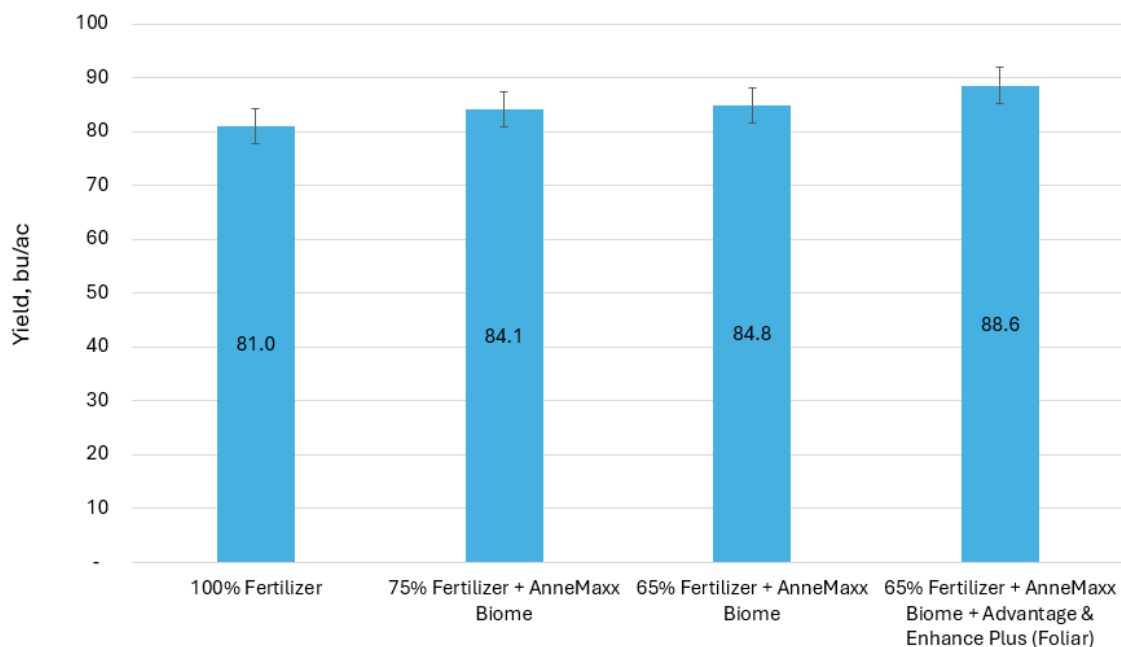


Figure 5. Yield of wheat by granular treatments, 2025

Figure 6. ROI in wheat by granular treatments, 2025

Parameter	75% Fertilizer + AnneMaxx Biome	65% Fertilizer + AnneMaxx Biome	65% Fertilizer + AnneMaxx Biome + Advantage & Enhance Plus (Foliar)
Fertilizer savings, \$/ac	35.00	49.00	49.00
AnneMaxx cost, \$/ac	27.00	27.00	48.00
Yield gain, \$/ac	22.08	27.03	53.57
Savings, \$/ac	30.08	49.03	54.57
ROI, %	111%	182%	114%

The 65% + both (granular and foliar) produced a yield gain of \$53.57 per acre, net savings of \$54.57 per acre, and an ROI of 114%. Unlike the 2024 result, which showed a negative ROI (-27%) and a statistically significant yield penalty, the 2025 data revealed a clear reversal: the yield increase was sufficient to outweigh the added foliar input cost, and the confidence intervals no longer overlapped with the control, indicating a statistically significant improvement.

Overall, the 2025 granular wheat experiment demonstrated that fertilizer reductions (to 75% or 65%) combined with the AnneMaxx™ Biome treatment consistently enhanced profitability, and the addition of the foliar Advantage & Enhance Plus package, which had been detrimental in 2024, became beneficial in 2025. These trends are directly reflected in the ROI values (Fig. 5-6).

In our view, the observed outcomes can be largely attributed to climatic differences between the two years. 2024 tied the previous national record (set in 2010) as the warmest year on record for Canada [1], whereas 2025 exhibited more moderate temperatures. Correspondingly, Lethbridge recorded only 154 mm of rainfall from April through August 2024, compared with 291 mm over the same period in 2025 [1]. The hotter, drier conditions in 2024 likely suppressed yields overall, thereby diminishing the apparent effect of AnneMaxx products on plant productivity.

Wheat – liquid treatments

Visually, every treatment outperformed the untreated control in 2025 (Fig. 7), a pattern that was reflected in the yield data. Notably, the foliar-application treatment appeared especially vigorous.



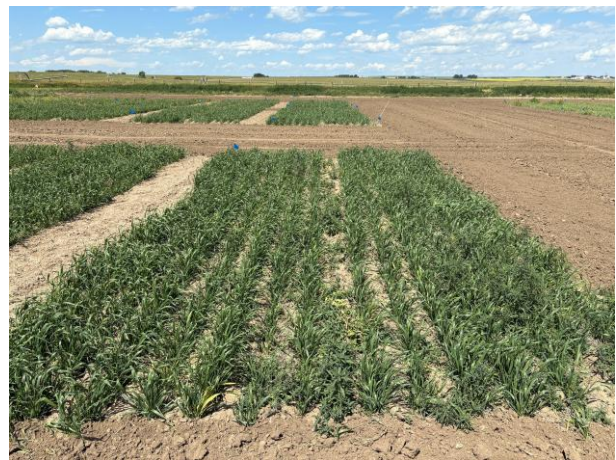
100% fertilizers



75% + liquid



65% + liquid



65% + both (liquid and foliar)

Figure 7. Visual appearance of wheat by liquid treatments, 2025

In 2024, every treatment produced a higher yield than the control (Fig. 8). Although the differences did not reach statistical significance, the win rate and numerical consistency were nevertheless impressive.

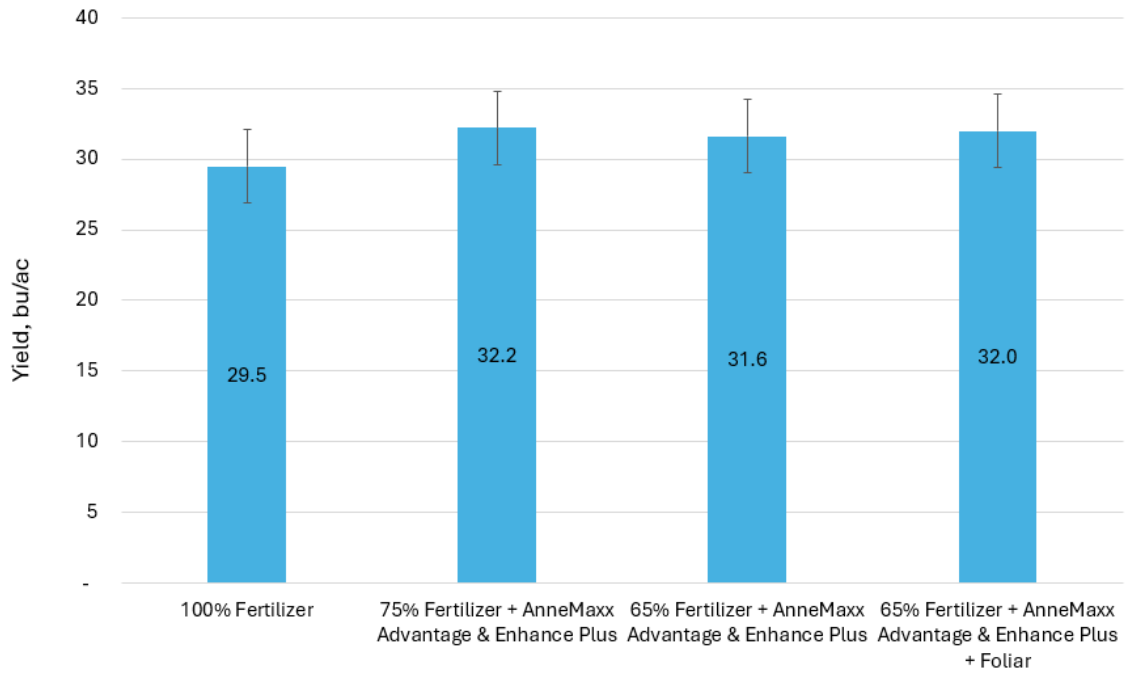


Figure 8. Yield of wheat by liquid treatments, 2024

The 75% + liquid treatment increased the yield by 9.2% and with the fertilizer saving of \$35 per acre combined with the \$21 per acre cost of the liquid AnneMaxx™ product produced a net benefit of \$15.08 per acre and an ROI of 158% (Fig. 8-9).

Figure 9. ROI in wheat by liquid treatments, 2024

Parameter	75% Fertilizer + AnneMaxx Advantage & Enhance Plus	65% Fertilizer + AnneMaxx Advantage & Enhance Plus	65% Fertilizer + AnneMaxx Advantage & Enhance Plus + Foliar
Fertilizer savings, \$/ac	35.00	49.00	49.00
AnneMaxx cost, \$/ac	21.00	21.00	42.00
Yield gain, \$/ac	19.11	14.86	17.69
Savings, \$/ac	33.11	42.86	24.69
ROI, %	158%	204%	59%

The 65% + liquid treatment delivered a 7.1% yield increase. With a \$49 per acre fertilizer reduction and the same \$21 per acre liquid input cost, the net savings reached \$22.00 per acre, resulting in the highest ROI among the liquid options at 204%.

The 65% + both (liquid and foliar) treatment added 8.5% yield (Fig. 8). The additional foliar cost raised the total input expense to \$42 per acre, reducing the net benefit to \$7.15 per acre and lowering the ROI to 59% (Fig. 9).

Overall, the 2024 liquid data showed that fertilizer reduction combined with liquid AnneMaxx™ products improved profitability, despite the hot and dry year [1] (Fig. 9).

In 2025 the results were even better. All treatments showed statistically significant yield gains over the control (Fig. 10-11). The 75% fertilizer + liquid treatment increased yield to about 62.4 bu/ac. With a \$35-per-acre fertilizer saving and a \$21-per-acre liquid input cost, the net benefit was \$30.08 per acre, giving a return on investment of 407%.

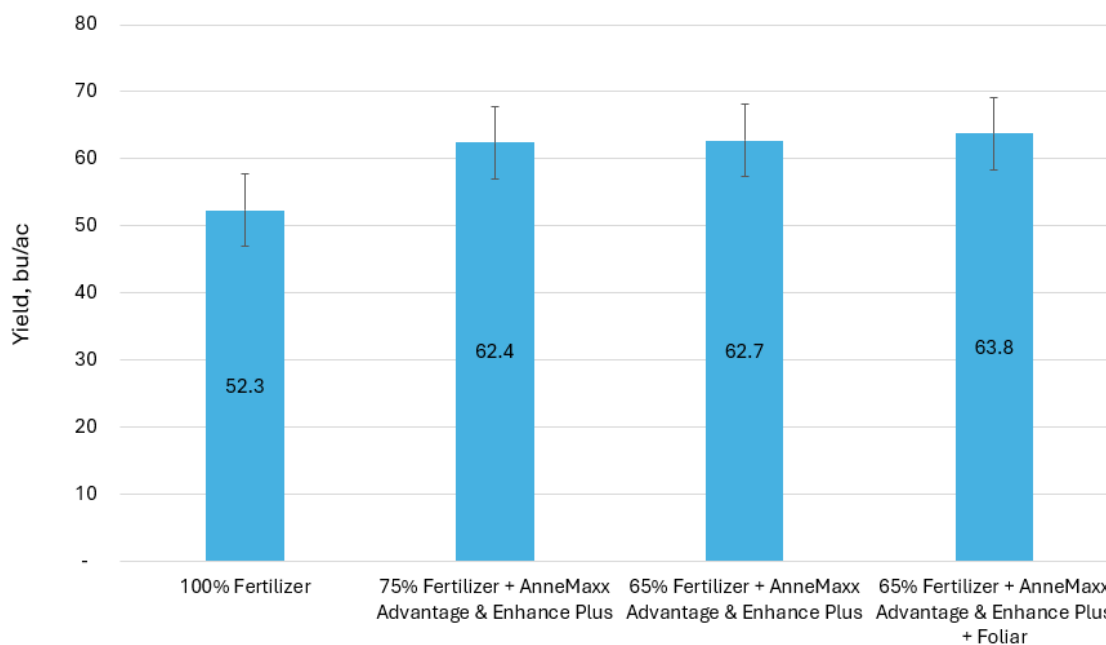


Figure 10. Yield of wheat by liquid treatments, 2025

The 65% fertilizer + liquid treatment yielded 62.7 bu/ac. The larger fertilizer reduction (\$49 per acre) combined with the same \$21-per-acre liquid cost produced net savings of \$54.57 per acre and the greatest ROI of the year at 484%.

The 65% fertilizer + both (liquid and foliar) treatment added a foliar spray of AnneMaxx™ Advantage and Enhance Plus. Yield for this treatment was the highest (63.8 bu/ac, Fig. 10), but the additional foliar cost raised total input expenses to \$42 per acre, reducing net savings to \$88.37 per acre and resulting in an ROI of 210%. While the foliar addition improved yield compared with the 65% + liquid alone, its economic efficiency was lower because the extra cost was not fully offset by the yield gain.

Overall, both 2024 and 2025 showed a very high potential of AnneMaxx™ liquid treatments in wheat, substantially boosting overall profitability (Fig. 10-11).

Figure 11. ROI in wheat by liquid treatments, 2025

Parameter	75% Fertilizer + AnneMaxx Advantage & Enhance Plus	65% Fertilizer + AnneMaxx Advantage & Enhance Plus	65% Fertilizer + AnneMaxx Advantage & Enhance Plus + Foliar
Fertilizer savings, \$/ac	35.00	49.00	49.00
AnneMaxx cost, \$/ac	21.00	21.00	42.00
Yield gain, \$/ac	71.47	73.59	81.37
Savings, \$/ac	85.47	101.59	88.37
ROI, %	407%	484%	210%

Canola – granular treatments

Visually, the 75% + granular and the 65% + both (granular + foliar) treatments appeared to exhibit somewhat greater plant vigor in 2025 (Fig. 12), but this difference was no longer evident by mid-season.



100% fertilizers



75% + granular



65% + granular



65% + both (granular and foliar)

Figure 12. Visual appearance of canola by granular treatments, 2025

In 2024, the canola results for the granular treatments were inconclusive.

In 2025, both the 75% + granular and the 65% + granular treatments failed to generate enough yield gain to offset their costs, resulting in negative returns on investment (-125% and -86 %, respectively) (Fig. 13-14).

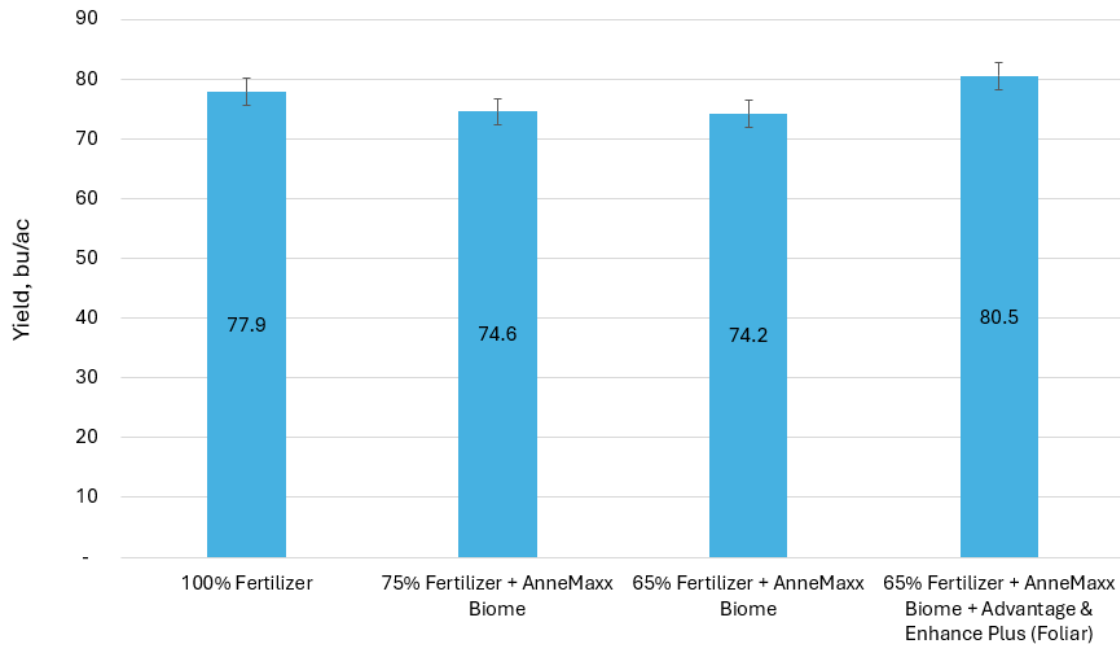


Figure 13. Yield of canola by granular treatments, 2025

By contrast, the 65% + both (granular and foliar) treatment combined the reduced fertilizer rate with a foliar spray of Advantage & Enhance Plus, which produced a positive ROI of 94% and a net profit per acre (Fig. 13-14).

Thus, in 2025 data the only granular treatment that delivered a financially favorable outcome was the one that incorporated the foliar application, while the reduced-fertilizer-only treatments remained uneconomical despite lower input expenditures.

Figure 14. ROI in canola by granular treatments, 2025

Parameter	75% Fertilizer + AnneMaxx Biome	65% Fertilizer + AnneMaxx Biome	65% Fertilizer + AnneMaxx Biome + Advantage & Enhance Plus (Foliar)
Fertilizer savings, \$/ac	40.00	56.00	56.00
AnneMaxx cost, \$/ac	27.00	27.00	48.00
Yield gain, \$/ac	-46.68	-52.17	37.12
Savings, \$/ac	-33.68	-23.17	45.12
ROI, %	-125%	-86%	94%

Canola – liquid treatments

In 2025 the canola stand establishment was less than perfectly uniform (Fig. 15); consequently, some data corrections were applied to account for these effects.



100% fertilizers



75% + liquid



65% + liquid



65% + both (liquid and foliar)

Figure 15. Visual appearance of canola by liquid treatments, 2025

In 2024 all treatments yielded numerically higher than the control, but the yield improvements were not statistically significant (Fig. 16). Consequently, every treatment achieved a positive return on investment, with ROIs ranging from 197% to 247% (Fig. 17). Overall yield in 2024 was lower than in 2025 because the year was hot and dry.

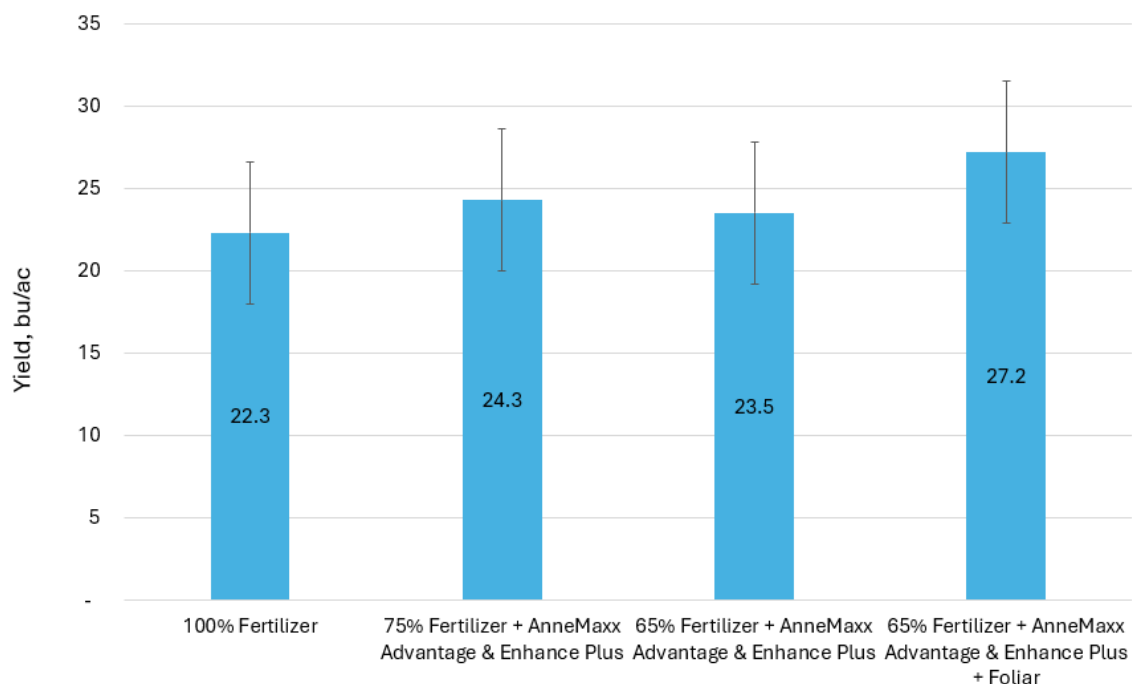


Figure 16. Yield of canola by liquid treatments, 2024

In 2025 both the 75% + liquid and the 65% + liquid treatments achieved higher yields (Fig. 18) and strong positive returns on investment (178%-240%, Fig. 19). However, the 65% + both (liquid and foliar) treatment produced a lower yield, likely because of the overall high level of fertilization in the field and, therefore, did not provide an advantage over the liquid-only approach.

Overall, we did not consistently observe a positive impact from foliar application when it was combined with the liquid treatment at planting. We believe these effects warrant further investigation, especially in canola.

Figure 17. ROI in canola by liquid treatments, 2024

Parameter	75% Fertilizer + AnneMaxx Advantage & Enhance Plus	65% Fertilizer + AnneMaxx Advantage & Enhance Plus	65% Fertilizer + AnneMaxx Advantage & Enhance Plus + Foliar
Fertilizer savings, \$/ac	40.00	56.00	56.00
AnneMaxx cost, \$/ac	21.00	21.00	42.00
Yield gain, \$/ac	28.12	16.87	68.90
Savings, \$/ac	47.12	51.87	82.90
ROI, %	224%	247%	197%

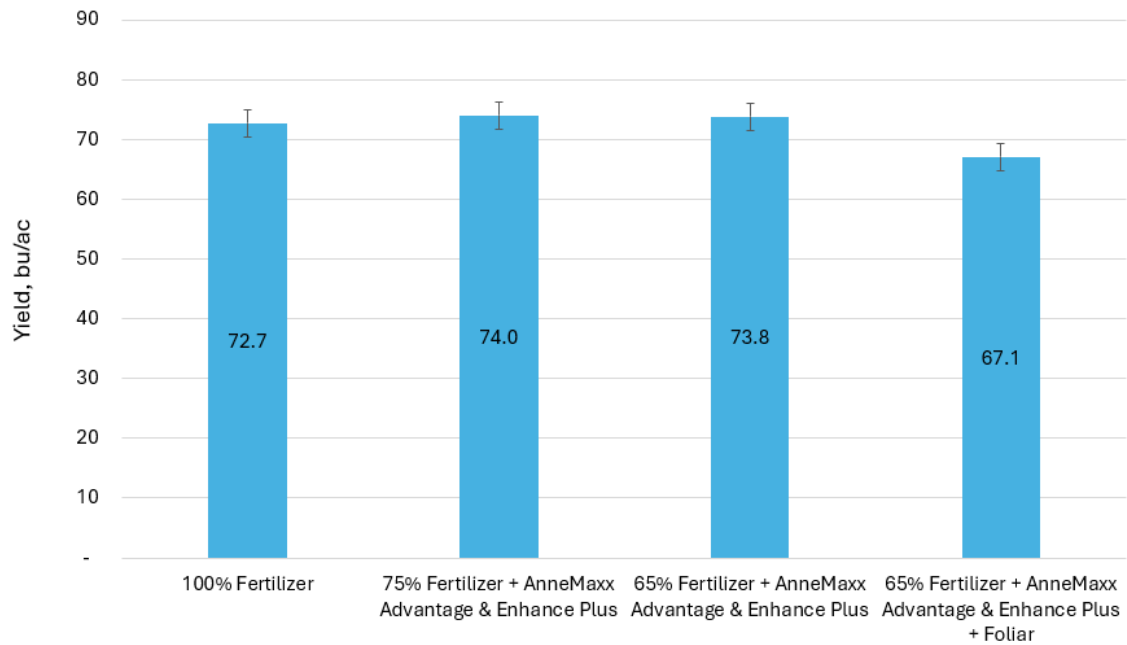


Figure 18. Yield of canola by liquid treatments, 2025

It is worth noting, that the negative ROIs in canola was amplified by the depressed canola price, which has been constrained by Chinese sanctions on Canadian exporters [2-4]. Between July and October 2025, the average market price fell by more than 14 %, reaching \$618.25 per tonne on 23 October 2025 [5]. This price drop reduced the revenue side of the ROI equation, turning what might have been a modest profit into a loss when the additional cost of the AnneMaxx™ products was taken into account.

Figure 19. ROI in canola by liquid treatments, 2025

Parameter	75% Fertilizer + AnneMaxx Advantage & Enhance Plus	65% Fertilizer + AnneMaxx Advantage & Enhance Plus	65% Fertilizer + AnneMaxx Advantage & Enhance Plus + Foliar
Fertilizer savings, \$/ac	40.00	56.00	56.00
AnneMaxx cost, \$/ac	21.00	21.00	42.00
Yield gain, \$/ac	18.28	15.47	-78.74
Savings, \$/ac	37.28	50.47	-64.74
ROI, %	178%	240%	-154%

Peas – granular treatments

All pea treatments appeared uniform and comparable to the control during the early growth stages (Fig. 20).



100% fertilizers



75% + granular



65% + granular



65% + both (granular and foliar)

Figure 20. Visual appearance of peas by granular treatments, 2025

All treatments produced markedly higher yields than the control in 2024 (Fig. 21), and the differences were highly statistically significant. These gains translated into equally impressive returns on investment, ranging from 546% to 1,040% (Fig. 22).

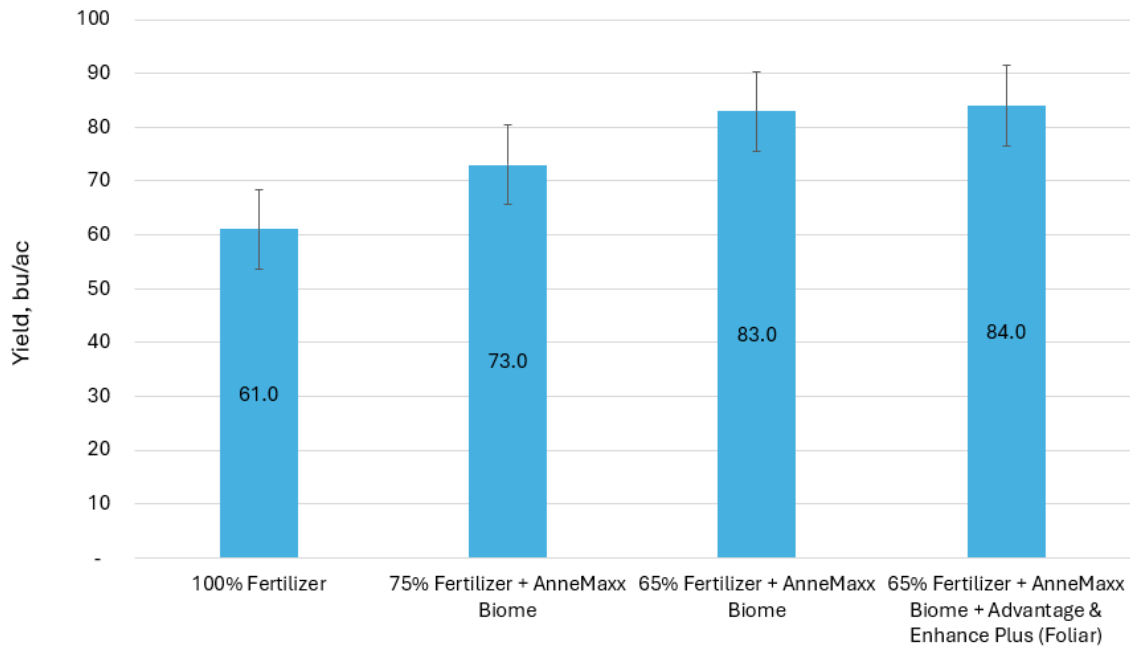


Figure 21. Yield of peas by granular treatments, 2024

Figure 22. ROI in peas by granular treatments, 2024

Parameter	75% Fertilizer + AnneMaxx Biome	65% Fertilizer + AnneMaxx Biome	65% Fertilizer + AnneMaxx Biome + Advantage & Enhance Plus (Foliar)
Fertilizer savings, \$/ac	27.50	38.50	38.50
AnneMaxx cost, \$/ac	27.00	27.00	48.00
Yield gain, \$/ac	146.96	269.43	281.68
Savings, \$/ac	147.46	280.93	272.18
ROI, %	546%	1040%	567%

Similarly, in 2025 every treatment surpassed the control in both yield and economic return (Fig. 23-24). ROI ranged from 102% to 322% (Fig. 24).

We believe the remarkable success of the AnneMaxx™ product in peas can be explained by the biology of the crop. Like other legumes, peas possess a sophisticated, evolutionarily refined mechanism that enlists soil bacteria for atmospheric nitrogen fixation and other symbiotic relationships. It is plausible that the Annelida biological products and associated bio stimulants delivered such a strongly positive effect on peas.

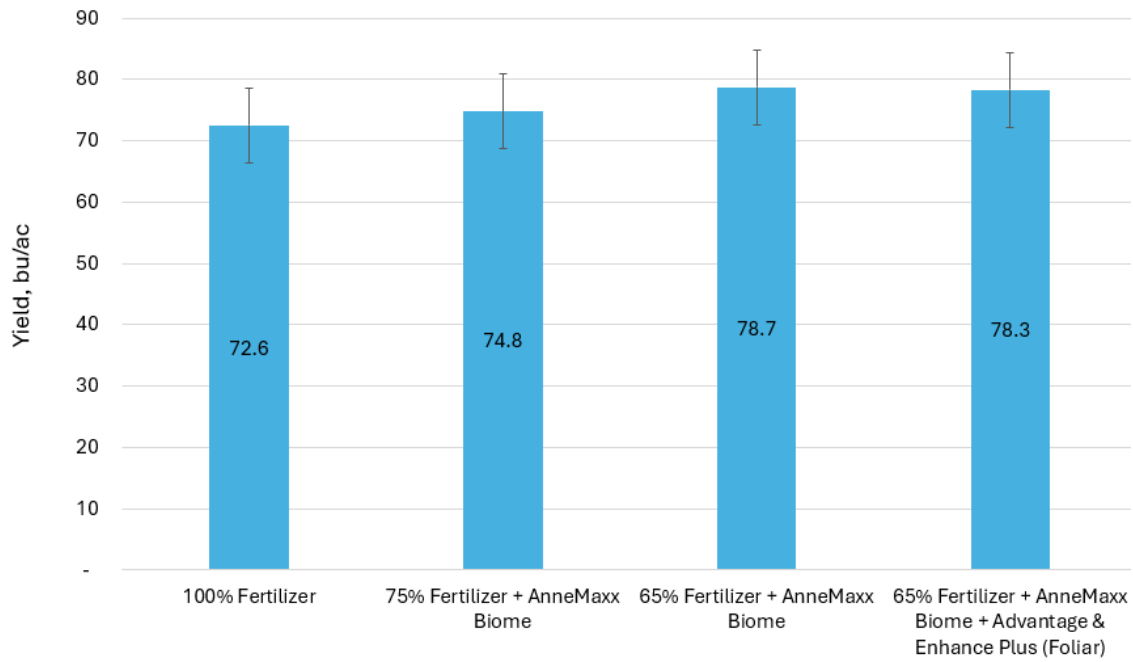


Figure 23. Yield of peas by granular treatments, 2025

Figure 24. ROI in peas by granular treatments, 2025

Parameter	75% Fertilizer + AnneMaxx Biome	65% Fertilizer + AnneMaxx Biome	65% Fertilizer + AnneMaxx Biome + Advantage & Enhance Plus (Foliar)
Fertilizer savings, \$/ac	27.50	38.50	38.50
AnneMaxx cost, \$/ac	27.00	27.00	48.00
Yield gain, \$/ac	27.07	75.56	70.66
Savings, \$/ac	27.57	87.06	61.16
ROI, %	102%	322%	127%

Peas – liquid treatments

Similarly to the granular treatments (Fig. 20), all pea liquid treatments appeared uniform and were either comparable to or somewhat more vigorous than the control during the early growth stages (Fig. 25).



100% fertilizers



75% + liquid



65% + liquid



65% + both (liquid and foliar)

Figure 25. Visual appearance of peas by liquid treatments, 2025

In 2024 a 75% fertilizer rate combined with the liquid AnneMaxx™ product raised the yield to about 51 bu/ac, a 15% increase (Fig. 26). The 65% + liquid treatment produced a yield statistically indistinguishable from the control. Adding a foliar spray, however, reduced the yield by 19%, however this decrease was not statistically significant in comparison with the 65% + liquid treatment.

In our view there is no consistent benefit from foliar application on top of high-fertility or other treatments, especially in dry years.

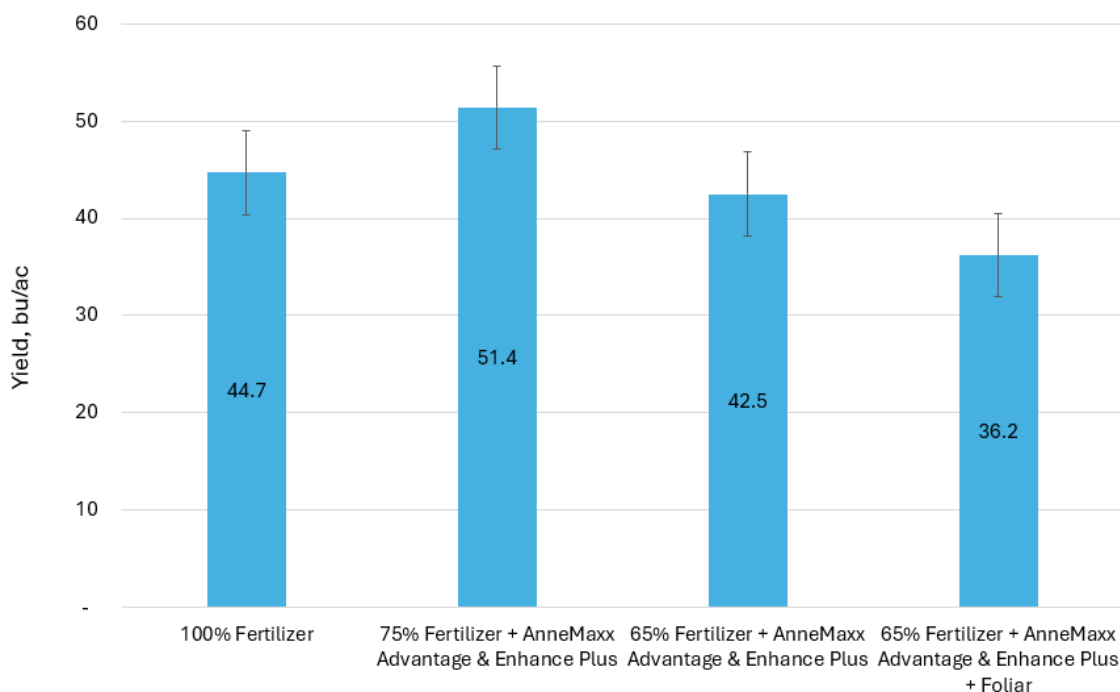


Figure 26. Yield of peas by liquid treatments, 2024

Figure 27. ROI in peas by liquid treatments, 2024

Parameter	75% Fertilizer + AnneMaxx Advantage & Enhance Plus	65% Fertilizer + AnneMaxx Advantage & Enhance Plus	65% Fertilizer + AnneMaxx Advantage & Enhance Plus + Foliar
Fertilizer savings, \$/ac	27.50	38.50	38.50
AnneMaxx cost, \$/ac	21.00	21.00	42.00
Yield gain, \$/ac	82.05	-26.94	-104.10
Savings, \$/ac	88.55	-9.44	-107.60
ROI, %	422%	-45%	-256%

In 2025 all treatments produced the yield statistically similar to the control (Fig. 28).

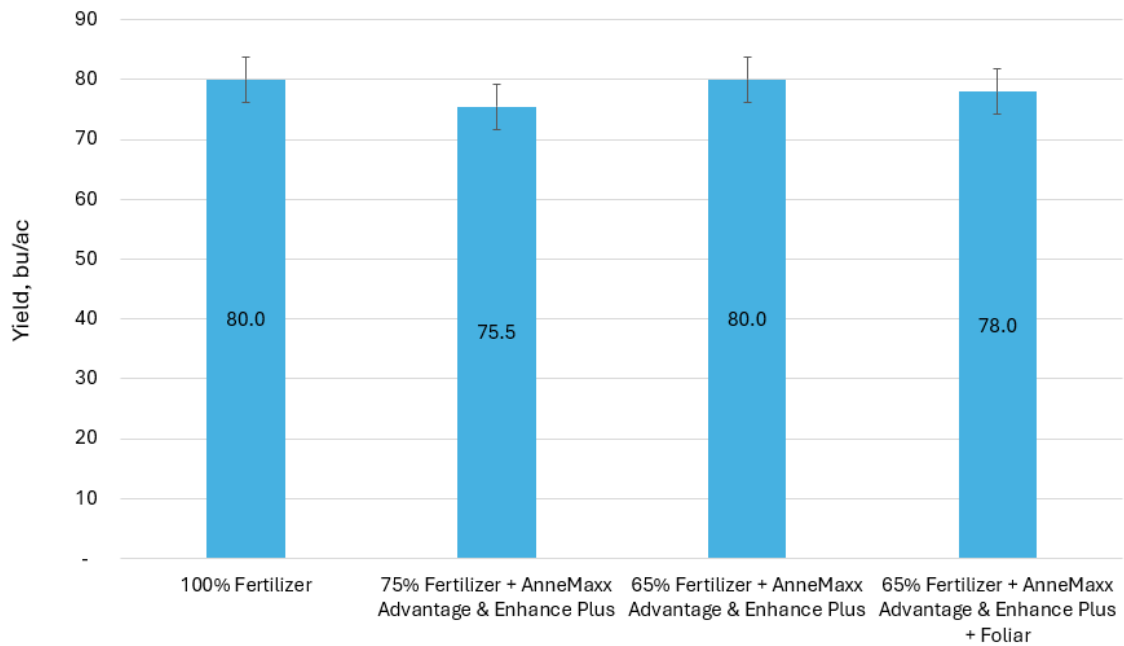


Figure 28. Yield of peas by liquid treatments, 2025

In terms of profitability, based on absolute yield numbers, the 65% + liquid approach generated the greatest return, while other treatments reduced the return (Fig. 29).

Figure 29. ROI in peas by liquid treatments, 2025

Parameter	75% Fertilizer + AnneMaxx Advantage & Enhance Plus	65% Fertilizer + AnneMaxx Advantage & Enhance Plus	65% Fertilizer + AnneMaxx Advantage & Enhance Plus + Foliar
Fertilizer savings, \$/ac	27.50	38.50	38.50
AnneMaxx cost, \$/ac	21.00	21.00	42.00
Yield gain, \$/ac	-55.11	0.00	-24.49
Savings, \$/ac	-48.61	17.50	-27.99
ROI, %	-231%	83%	-67%

Summary

Overall, the study confirms that AnneMaxx™ products produced a measurable influence on wheat, canola and pea performance. When the treatments are combined with reduced fertilizer rates, as recommended by Annelida, the return on investment is overwhelmingly positive.

If statistical significance is taken into consideration, 30 of 33 trials (91%) with reduced fertility across all three crops (wheat, canola and peas) produced yields similar to or higher than the control with full fertility (Fig. 30).

Figure 30. Frequency of trials with yield equal or above control in Lethbridge, AB, 2024-2025

Treatment	Total trials, ea.	Trials with yield above or equal to control, ea.	Trials with yield above or equal to control, %
Granular	10	9	90%
Granular + Foliar	5	5	100%
Liquid	12	12	100%
Liquid + Foliar	6	4	67%
All	33	30	91%

It is worth noting that the liquid treatment and the combination of granular + foliar treatments were effective in 100% of trials (12 of 12 and 5 of 5, respectively; Fig. 30).

Furthermore, across the 33 trials, a clear majority (76%) delivered a positive ROI, with an average ROI of 166% (Fig. 31). This indicates that the AnneMaxx™ treatments are generally financially advantageous when paired with reduced-fertilizer regimes.

Figure 31. Frequency of trials with positive ROI in Lethbridge, AB, 2024-2025

Treatment	Total trials, ea.	Trials with positive ROI, ea.	Trials with positive ROI, %	Average ROI, %
Granular	10	8	80%	223%
Granular + Foliar	5	4	80%	175%
Liquid	12	10	83%	198%
Liquid + Foliar	6	3	50%	-2%
All	33	25	76%	166%

Among the individual treatment groups, the granular application without foliar spray produced the highest average ROI at 223%, although it was profitable in 80 % of its trials. The liquid treatment without foliar had the highest consistency, achieving a positive ROI in 83 % of its trials and an average ROI of 198 %. This makes the liquid-only approach a reliable choice for growers who prioritize steady financial outcomes (Fig. 31).

The granular + foliar combination matched the granular treatment in consistency (80 % positive ROI) but yielded a lower average ROI of 175%. The addition of foliar spray appears to provide a modest boost in some cases without substantially increasing overall profitability. In contrast, the liquid + foliar regimen performed poorly: only half of its trials were profitable, and the average ROI was slightly negative (-2%). The extra cost of the foliar application outweighed the yield benefit in many instances, especially under the dry conditions observed in the study (Fig. 31).

Overall, the results suggest a good trade-off between maximum upside and reliability. Granular fertilizer without foliar offers the greatest upside when it works, but it fails in 20 % of cases. Liquid fertilizer without foliar provides the most dependable profitability, with a strong average ROI and the highest proportion of positive outcomes. Foliar additions improve the granular treatment modestly but can erode the benefits of the liquid treatment, leading to mixed or negative financial results. Decision-makers should weigh their tolerance for risk against the desire for higher returns when selecting the optimal treatment package for a given environment.

Annelida Soil Solutions is committed to promoting responsible fertilizer stewardship. By improving nutrient-use efficiency and supporting soil health, the company's portfolio seeks to reduce the reliance on excessive fertilizer applications while maintaining or enhancing crop productivity.

Conclusions

1. Granular treatments delivered 90% of trials with yields equal to or above the control, 80% of trials with positive ROI, with an average ROI of 223%.
2. Granular + foliar treatments achieved 100% of trials with yields equal to or above the control, 80% of trials with positive ROI, with an average ROI of 175%.
3. Liquid treatments produced 100% of trials with yields equal to or above the control, 83% of trials with positive ROI, with an average ROI of 198%.
4. Liquid + foliar treatment resulted in 67% of trials with yields equal to or above the control, 50% of trials with positive ROI, with an average ROI of -2%.
5. Overall, the findings indicate a reasonable trade-off between upside and reliability. Granular treatments provided the highest potential ROI, but failed in 20% of trials, while liquid treatment offered more consistent profitability with the strong average ROI.

Recommendations

1. Use the AnneMaxx™ products at recommended rates and reduced fertilization levels to boost yield and maximize cost-efficiency.
2. Reduce the target fertilization rate to a realistic level for each growing area in future trials.
3. Include a 75 % fertilizer control in future trials to assess the overall fertility level of the field.
4. Investigate the implications of foliar application alone and in combination with other treatments.

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