

# Standing Up with Your Own Stalk: Do plant growth regulators improve productivity of wheat varieties?



## Objective:

To demonstrate the response of current and common Canadian Western Red Spring (CWRS) wheat varieties to the plant growth regulators (PGR) registered for use in spring wheat.

## Trial Design:

- The project was conducted at six locations in Saskatchewan: Melfort, Prince Albert, Outlook, Indian Head, Yorkton, and Scott.
- Two PGR products (Manipulator and Moddus) were applied to four spring wheat varieties (AAC Brandon, AAC Alida, AAC Redberry, and AAC Starbuck).

## Results:

- At Melfort, Scott, Outlook, and Indian Head the application of PGR significantly reduced crop height; however, there was no significant difference between PGR products. Varietal responses to PGR products were not consistent among sites. At Scott and Indian Head, AAC Brandon had significantly reduced height with Manipulator as compared to the control, but not with Moddus. And AAC Redberry had significantly reduced height with both PGR products.
- Days to maturity was only significantly affected by PGR at Indian Head, where Manipulator significantly increased days to maturity as compared to no PGR; however, the effect was too small to be of any agronomic concern.
- At both Yorkton and Indian Head, the application of Manipulator and Moddus significantly reduced lodging as compared to no PGR; however, the degree of lodging at both sites was minimal. At Indian Head, AAC Redberry was the only variety to demonstrate a significant reduction in lodging when both PGR products were applied.
- Grain yield was only significantly affected by PGR at Melfort, where Moddus reduced crop yield by 15% compared to no PGR. Manipulator reduced yield by 6% from no PGR, but this difference was not significant.
- Seed quality parameters such as test weight, thousand kernel weight (TKW), and protein were significantly affected by PGR depending on the site and variety. At Indian Head and Melfort, test weight and protein were

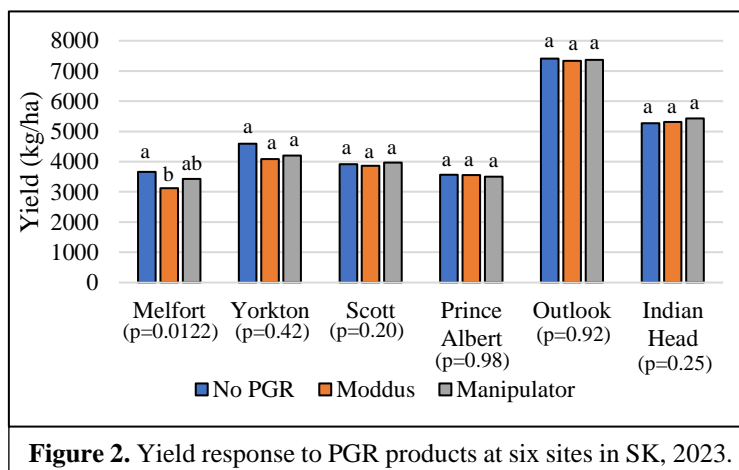
significantly reduced in all wheat varieties with PGR applications. At Outlook, the TKW of AAC Redberry was significantly reduced with PGR applications.

## Conclusions:

Results varied by site, but when PGR was significant, applying a PGR reduced crop height, prolonged days to maturity and reduced crop lodging. When variety was significant, varietal response was similar to characteristics in the SK seed guide. Overall, there were very few differences in varietal response to PGRs, which suggests that these varieties responded to both PGRs in a similar manner in this one-year demonstration.

**Table 1.** Significant responses to crop height (cm) when PGR products were applied to wheat varieties at Scott and Indian Head, 2023.

| <i>PGR*Variety</i>       | Scott             | Indian Head |
|--------------------------|-------------------|-------------|
|                          | p=0.0007          | p=0.0019    |
|                          | plant height (cm) |             |
| No PGR AAC Brandon       | 70 CDE            | 73 BCD      |
| No PGR AAC Alida         | 76 AB             | 82 A        |
| No PGR AAC Redberry      | 77 A              | 79 AB       |
| No PGR AAC Starbuck      | 73 BC             | 73 CDE      |
| Moddus AAC Brandon       | 66 EFG            | 72 CDE      |
| Moddus AAC Alida         | 69 CDEF           | 76 BC       |
| Moddus AAC Redberry      | 65 FG             | 69 EF       |
| Moddus AAC Starbuck      | 68 DEFG           | 70 DEF      |
| Manipulator AAC Brandon  | 65 G              | 67 F        |
| Manipulator AAC Alida    | 72 BCD            | 73 CDE      |
| Manipulator AAC Redberry | 69 CDEFG          | 69 EF       |
| Manipulator AAC Starbuck | 70 CDEF           | 69 EF       |



**Figure 2.** Yield response to PGR products at six sites in SK, 2023.

The full report is available at [www.warc.ca](http://www.warc.ca). This project was supported by the Agricultural Demonstration of Practices and Technologies (ADOPT) initiative under the Canadian Agricultural Partnership bi-lateral agreement between the federal government and the Saskatchewan Ministry of Agriculture. Additionally, we would like to thank the Saskatchewan Wheat Development Commission for providing funding for the Indian Head Agricultural Research Foundation and the Western Applied Research Corporation in this demonstration.

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