

This project was initiated to demonstrate the responsiveness of barley to plant growth regulators (PGRs) across a wide range of environmental conditions in Saskatchewan. The small plot trials were conducted at Melfort, Indian Head, Prince Albert, Outlook, and Scott, SK in 2022. Scott and Outlook are in the dark brown soil zone, and the remaining sites locate in the black soil zone. Outlook site was managed under irrigation. The treatments were arranged in a split-plot design, where PGR was the main-plot and barley variety was the sub-plot. Within barley varieties, 3 malt varieties (AAC Synergy, CDC Fraser, and AAC Connect) and 3 feed varieties (CDC Austenson, Oreana, and Claymore) were used. The PGR used in the demonstration was Moddus (trinexepac-ethyl) applied at GS 30-32 (early stem elongation) at a rate of 0.42L/ac. Nitrogen was applied based on yield potential of the site where Melfort and Outlook were considered high yield potential and applied 146 kg of N/ha (soil + applied) and Prince Albert, Indian Head, and Scott were considered mid-range yield potential and applied 135 kg N/ha (soil + applied).

Data collection consisted of plant density, height, lodging, grain yield, protein, test weight, seed weight, and percent plumps. Plant density was significantly affected by variety at Indian Head and Prince Albert, whereas AAC Synergy and Claymore had higher plant densities as compared to AAC Connect at both sites. Height was significantly reduced for all varieties across all sites with the application of a PGR, except for the variety Oreana (Figure 1). This may have been because Oreana was significantly shorter than all other varieties without a PGR application. Lodging only occurred at Outlook and Indian Head, where lodging was significantly reduced with a PGR application across varieties when sites were analyzed individually. Grain yield was significantly different between varieties at Melfort, Indian Head, and Prince Albert, while Scott had no significant treatment differences. Outlook was the only site to have a significant variety by PGR interaction where CDC Austenson demonstrated significantly increased grain yield when

PGR was applied (Figure 2). Lastly, when PGR was significant for grain quality, protein was not affected, but test weights, seed weights, and % plumps often declined, but responses varied depending on the location.

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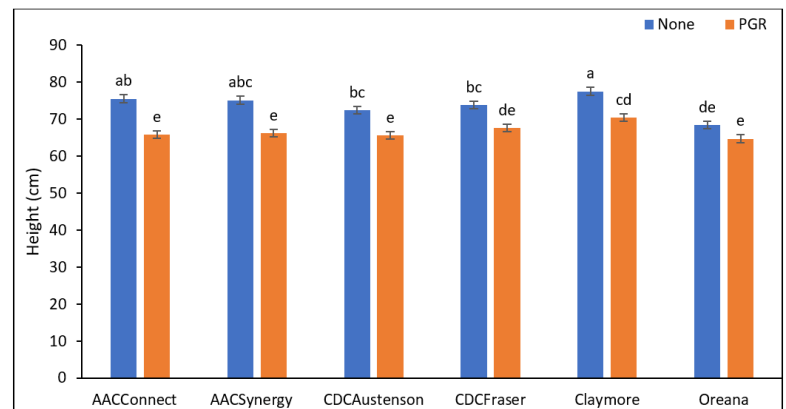


Figure 1. The interaction of variety with PGR application across all sites in 2022. Error bars indicate the standard error. Means followed by the same letter do not significantly differ.

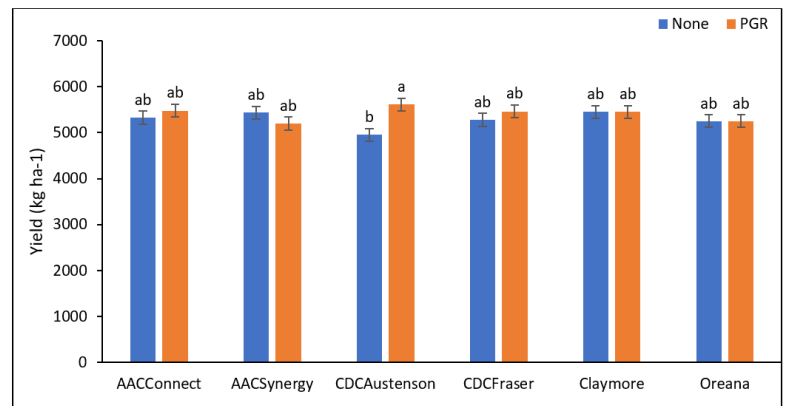


Figure 2. The interactive effect of PGR and variety on yield at Outlook in 2022. Error bars indicate the standard error. Means followed by the same letter do not significantly differ.