# Factsheet: Dry Bean Inoculant and Fertilizer Strategies for Solid Seeded Production

## Objective:

The objectives of this study were to demonstrate the efficacy of commercial dry bean inoculant formulations alone or in conjunction with fertilizer nitrogen. As well as, to evaluate the potential for solid seeded dry bean production under dry land conditions in the non-irrigated areas of Saskatchewan.

## Methodology:

Trials were conducted under natural rain-fall conditions at Scott, Redvers, Yorkton, and Indian Head in 2019. An additional trial was conducted under irrigation at Outlook to serve as a production reference. CDC Blackstrap was seeded to target a plant population of 35 plants/$m^2$ in a solid seeded system using 25 cm (10”) or 30 cm (12”) row spacing. Factors evaluated included inoculation and Nitrogen fertilization. Inoculant formulations included a peat formulation (N Charge, on-seed application) and granular formulation (PRIMO GX2, in-furrow application). All inoculant treatments were applied without fertilizer N additions or with fertilizer N additions such that total N (soil test N + fertilizer N applications) equaled 80 lbs N/ac.

**Table 1.** Inoculant and fertilizer treatments.

| Trt # | Inoculant | Formulation | Total N (soil + fertilizer) |
|---|---|---|---|
| **1** | Control | n/a | 0 lbs N/ac |
| **2** | N Charge | Peat on-seed | 0 lbs N/ac |
| **3** | N Charge | Peat on-seed + molasses | 0 lbs N/ac |
| **4** | N Charge | Pretreated Polymer Peat on-seed | 0 lbs N/ac |
| **5** | PRIMO GX2 | Granular | 0 lbs N/ac |
| **6** | N Charge + PRIMO GX2 | Peat on-seed + Granular | 0 lbs N/ac |
| **7** | Control | n/a | 80 lbs N/ac |
| **8** | N Charge | Peat on-seed | 80 lbs N/ac |
| **9** | N Charge | Peat on-seed + molasses | 80 lbs N/ac |
| **10** | N Charge | Pretreated Polymer Peat on-seed | 80 lbs N/ac |
| **11** | PRIMO GX2 | Granular | 80 lbs N/ac |
| **12** | N Charge + PRIMO GX2 | Peat on-seed + Granular | 80 lbs N/ac |

**The full report is available at: www.warc.ca. This project was funded by the Agricultural Demonstration of Practices and Technologies (ADOPT) initiative under the Canada-Saskatchewan Canadian Agricultural Partnership (CAP) bi-lateral agreement.**

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## Key Findings:

- Treatment of dry bean with inoculant products generally resulted in little to no yield response at any of the trial locations except Indian Head. At Indian Head yields were highest for the granular and the dual inoculant treatments.
- The granular and dual inoculant treatments positively influenced yield when combined across all sites (Figure 1).
- All trial locations obtained significant yield responses to the addition of fertilizer N. Results from all sites indicate that supplemental fertilizer N is required to optimize dry bean yield.
- The combination of N fertilizer additions and inoculant had no significant impact on yield. It was concluded that in this study, N fertilizer additions increased and influenced yield to a greater extent than inoculation.
- The Outlook site was irrigated and yields obtained at this site generally doubled those obtained at the remaining dryland locations.
- Yield results indicate that, for all sites, the average yield response to N fertilizer was 521 kg/ha (464 lbs/ac). The average yield response to N fertilizer increases to 690 kg/ha (614 lbs/ac) when analyzing the dryland sites alone.
- Presently, Black dry beans are being purchased at $0.75/kg ($0.34/lbs) so the gross return of the fertilizer additions on the dryland sites is approximately $518/ha or $209/ac, easily an economic return for the fertilizer investment.

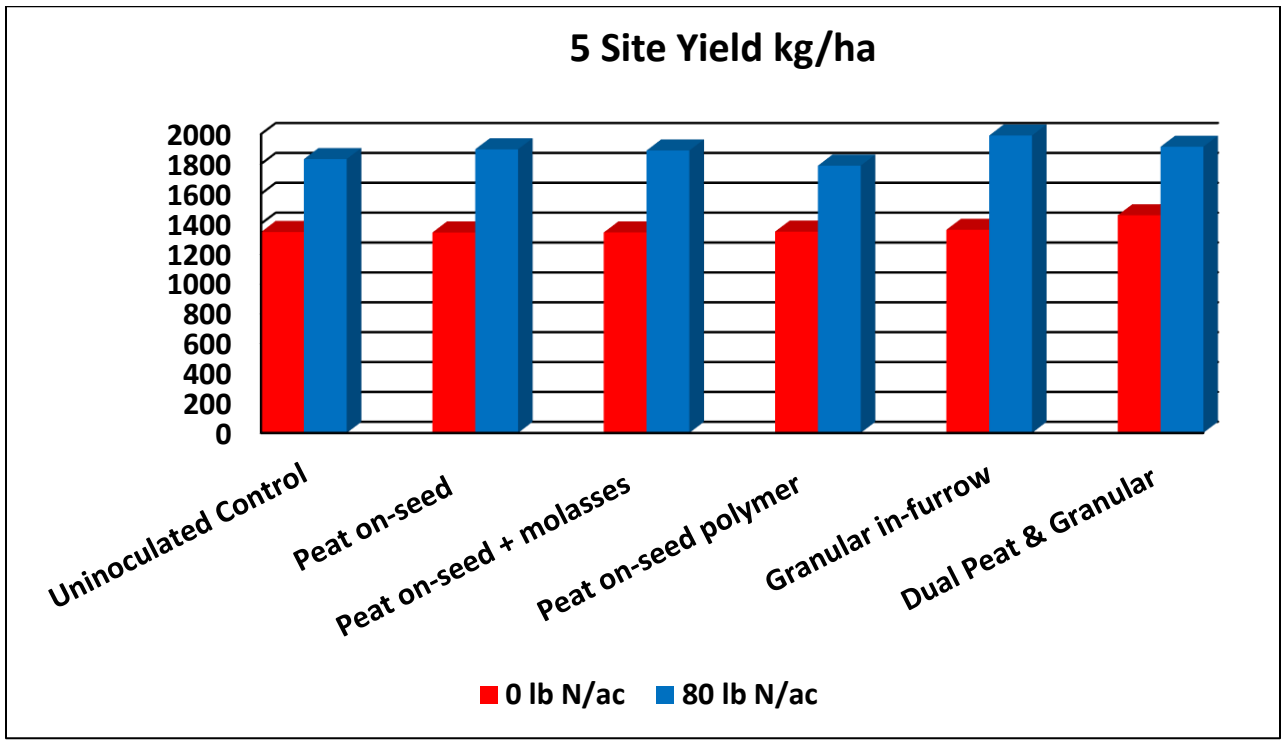


**Figure 1.** Dry Bean Combined Site Yields: Effect of Inoculation and N Fertilization, 2019.

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