

# Wheat Wise On-Farm Trial Program

## Foliar-Applied Nitrogen-Fixing Biological Products For Wheat

Wheat and canola generally require a large supply of nitrogen (N) to support high yields and quality. New, commercially available biological products may have the ability to facilitate biological N fixation in non-legume crops, potentially reducing the N fertility requirements of these crops. However, there is little publicly available data regarding the performance of N-fixing biological products on wheat.

### Objective

To determine if there are agronomic and economic benefits of applying a commercially available, foliar-applied N-fixing bacteria product (Envita®) in wheat.

Option A: Two treatments		Option B: Four treatments	
1)	Untreated check	1)	Normal N rate + Untreated
2)	Envita® at recommended rate and timing	2)	Normal N rate + Envita®
		3)	Reduced N rate + Untreated
		4)	Reduced N rate + Envita®

The treatments were replicated and applied in randomized strips. Option A trials were replicated four times (8 plots total) and Option B trials were replicated three times (12 plots total). All plots were managed the same agronomically including seeding date, variety, seeding depth, seed treatment, and pesticide application.

## Procedure

The following procedure was followed at all trial sites, unless otherwise specified in the individual site reports:

1. Spring soil samples were collected at each trial site prior to seeding and fertilizer application to assess residual soil nutrient levels. A minimum of 12 soil cores were collected throughout the trial area, separated by 0–6" and 6–24" depths.
2. The normal N fertilizer rate was determined by the producer and their agronomist as per their management practices. The reduced N rate treatments were 90 percent or less of the normal N rate. Actual applied N rates were documented.
3. For Option A, the entire field was seeded at the normal N fertilizer rate and Envita® treatment strips were established at the recommended timing using the provided randomized field plan.
4. For Option B, N fertility treatments were established at seeding time (or N fertilizer application time) and Envita® application was completed at the recommended timing using the provided field plan.
5. Envita® was either tank-mixed at herbicide timing or applied as a separate pass. Label recommendations were followed.
6. Yield was determined for each plot separately by weighing with a weigh wagon or grain cart with scale.
7. Grain samples were collected from each plot separately for grain quality analysis.

## Data Collection

- Spring soil sample
- Spring plant density
- Yield (corrected for moisture content)
- Grain quality (protein content, test weight, seed size)
- General observations throughout the season
- Weather data (Daily temperature and precipitation)
- Management (applied fertilizer rates, seeding date, pesticide applications, etc.)



Sask Wheat wishes to thank  
Syngenta for their support by  
donating Envita®.

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