

## Oxford Soil and Crop – Envita Trials (2021-2022)

Envita trials have been a major project at Oxford Soil and Crop the past two growing seasons (2021-2022). Envita is a product containing nitrogen fixing bacteria that is promoted to fix nitrogen in crops. The aim of the product is to incorporate bacteria into the plant where it can fix nitrogen (N) for the plant. It can be applied foliar or in-furrow to accomplish this.

Oxford trials were completed under co-operator’s standard practices (N-rates etc.). Plots receiving Envita were compared to plots not receiving Envita. Most trials applied Envita as a foliar application.

Seven trials were completed in corn and three in soybeans. Responses across locations were variable, but in corn an average 2.2 bu/ac yield response was observed (Table 1) while in soybeans the average yield response was 1.4 bu/ac (Table 2).

**Table 1.** Envita nitrogen fixation product trials in corn in Oxford County, 2021-2022.

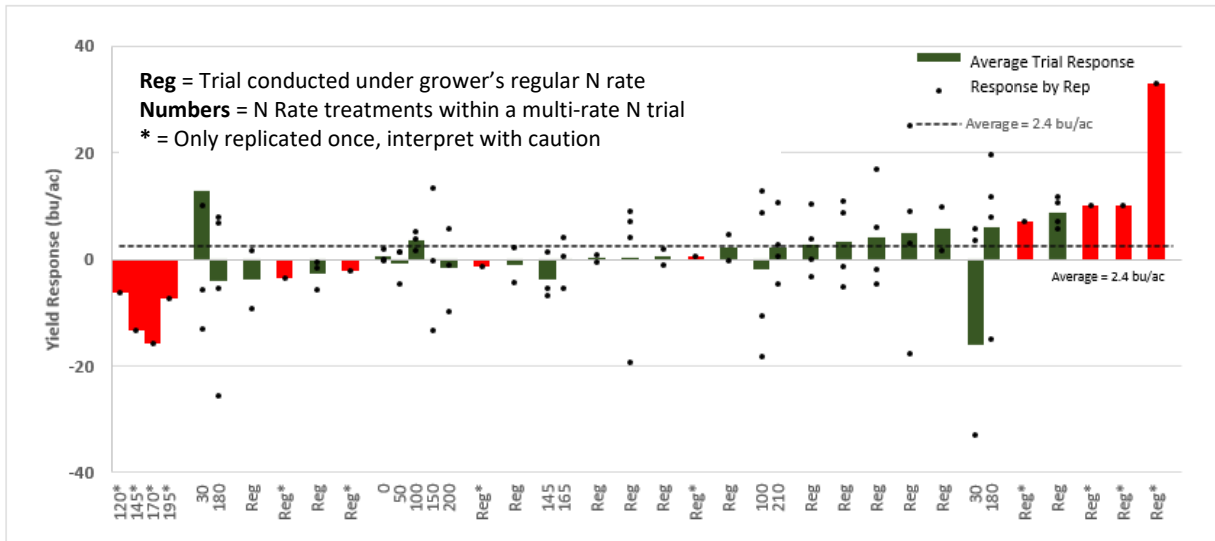
Trial	Control	Envita	Response
	----- yield (bu/ac) -----		
22PAT	241	240	-1
22PYN	223	232	9
22REN	252	258	6
21HAR	259	256	-3
21PYN	219	222	3
21RENP	271	271	0
21RENC	248	250	2
<b>AVERAGE</b>			<b>2.2</b>

**Table 2.** Envita nitrogen fixation product trials in soybeans in Oxford County, 2021-2022.

Trial	Control	Envita	Response
	----- yield (bu/ac) -----		
22HAR	43	45	2
22PAT	79	79	0
21HARS	59	62	3
<b>AVERAGE</b>			<b>1.4</b>

Oxford trials have been part of a wider effort with other Soil and Crop counties to evaluate Envita. When all data is pooled for corn (27 trials), an average yield response of 2.4 bu/ac has been observed (Fig. 1). There are a handful of locations with large and sometimes consistent yield responses, but many trials where yield differences are minimal. A common question for nitrogen fixation products is “do they increase yields under an N responsive environment?”, in other words, can nitrogen fixation in plants compensate for lack of nitrogen fertilizer in a low N environment, or essentially replace some fertilizer N? A handful of trials included multi-N rates to investigate this, but there

did not seem to be a stronger response for Envita at low N rates where yields were responsive to N at these trials.



**Figure 1.** Yield response to Envita at 27 corn trials in Ontario, 2021-2022.

Incorporating nitrogen fixation into non-legume crops would provide a significant benefit to agriculture, particularly if it can replace some nitrogen fertilizer, and there is considerable grower interest in this concept. In these trials, there have been questions about consistency of Envita yield responses, and what causes this, for instance - is it variability in successful establishment of bacteria in plants? Is it not providing a consistent yield benefit even when established? Are there environments or hybrids very rich in N that make additional yield benefits difficult to attain? Investigation into these questions may be required to fine tune understanding of where these products may best respond but would likely be beyond the scope of Soil and Crop trials. This product may be tested for one more year.

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