

Checking soybeans for Proper Nodulation and Intervention with Nitrogen when Warranted

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During the Crop Diagnostic School I have been astounded by the reports and observations of poor soybean nodulation this year. Listed below are common factors acting alone or in combination to cause nodulation failures:

- First year soybeans
- Lack of granular inoculant application
- Harsh seedbed conditions – dry and cold
- Acidic soil (Figure 1)
- High residual soil nitrate (Figure 2)



Figure 1. Poor nodulation under dry and acidic soil (<pH 5.5).

Figure 2. Impressive vegetative topgrowth, yet poor nodulation where soil nitrate levels were 70-100 lb N/ac

When scouting soybeans now, one should be digging plants and inspecting nodule counts. MB Pulse and Soybean Growers Association research has indicated good yields when soybeans have 10 or more healthy nodules per plant. Likewise, research has shown soybeans with less than 5 nodules per plant may benefit in yield from nitrogen application¹.

If plants have good vegetative growth, the proper timing for a rescue nitrogen application is the R3 to R4 stage, when pods are filling. Some 50-100 lb N/ac is suggested, generally as broadcast granular fertilizer since foliar contact of UAN (28-0-0) solution causes great leaf burn.

Some soybeans have not produced much vegetative growth, and so nitrogen application should proceed as soon as possible (following the Ontario rescue guidelines). As always, rain is required to incorporate the nitrogen into the soil for root uptake.

References:

¹ Heard, J., D. Lange and J. Peters.2011. Rescue applications of nitrogen for non-nodulated soybeans. [Jhttps://umanitoba.ca/faculties/afs/agronomists_conf/media/Heard_Rescue_N_applications_poster.pdf](https://umanitoba.ca/faculties/afs/agronomists_conf/media/Heard_Rescue_N_applications_poster.pdf)