



# Nitrogen fixation potential of faba bean in western Canada

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*Nodules on faba bean roots with faba bean field in the background. Photo by Hamid Khazaei.*

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Faba bean is the most efficient nitrogen (N)-fixing crop, but there are few recent studies in western Canada that assess its macronutrient uptake and N fixation. Further evidence is needed to support potential benefits of faba bean in prairie cropping systems.

A recent *Agronomy Journal* study showcases two experiments in Saskatchewan, Canada: (i) a two-year multi-location field experiment investigating the effect of fertilization on yield, macronutrient uptake, and seed/straw partitioning and (ii) a one-year controlled-environment study assessing how phosphorus (P) fertilization influences the same components, including N fixation.

Faba bean showed high yield potential associated with significant external contribution of N (> 80%) derived from N fixation. Although fertilization did not significantly affect yield, cultivar, or field-site location, N and P uptake were affected by all three factors to varying degrees. Higher proportions of N and P were taken up in grain than straw, supporting the recommendation that soil P removed in grain harvest should be replaced to maintain soil fertility over time.

Overall, results support the efficiency of N fixation by faba bean grown in western Canada and provide further incentive to expand the use of faba bean in crop rotations for the rapidly expanding plant protein industry.

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Klippenstein, S.R., Khazaei, H., Vandenberg, A., & Schoenau, J. (2021). Nitrogen and phosphorus uptake and nitrogen fixation estimation of faba bean in western

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