

AGR1510: Development of a Rhizobium Inoculant for Faba Bean

Although currently there are not large acreages of faba beans grown in Saskatchewan, faba beans should be a good fit for crop rotations in the Black soil zone, especially as a substitute crop for peas when pea diseases become a problem. Faba beans are a particularly attractive crop because of its ability to obtain large amounts of its nitrogen (N) through biological fixation of N in the atmosphere. Under rain-fed, dryland conditions approximately 80% of the N in faba beans can be obtained through biological N fixation. In order for faba beans to fix optimal amounts of N the roots of faba beans must be infected with an appropriate strain of *Rhizobium leguminosarum* bacteria. The bacteria are typically introduced into the rooting zone in the soil at seeding either as a seed coating or in a granule or liquid placed in or near the seeding furrow. Different strains of the bacteria differ in their effectiveness in fixing N. This study field tested two strains of *R. leguminosarum* that were previously identified from a laboratory study, at two sites in each of two years. Two different species of faba beans were tested, one which produces a large seed and another which produces a small seed. In all cases the faba beans inoculated with the bacterial strains fixed more N than faba beans inoculated with water or heat-killed bacteria. While the improved N fixation did not always translate into higher yields, it does mean that more N is left in the soil for other crops in the crop rotation. There is potential to develop one or both of these strains into commercial inoculants that are adapted to Saskatchewan soils, giving farmers flexibility in inoculants for faba bean crops.