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Effects of *Rhizobium* inoculation, organic and chemical fertilizers on yield and physical properties of faba bean seeds

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Abstract. A field experiment was carried out to investigate the effect of *Rhizobium* inoculation, sulphur, nitrogen and chicken manure on yield, 100-seed weight, cookability, non-soakers, total defects and hydration coefficient of faba bean. The results showed that sulphur, nitrogen and chicken manure treatments significantly ($p \leq 0.05$) increased yield, 100-seed weight, non-soakers, and hydration coefficient, in the absence of *Rhizobium* inoculation. The results also showed that *Rhizobium* inoculation significantly ($p \leq 0.05$) increased yield, 100-seed weight, cookability, but decreased non-soakers. A positive correlation ($r = 0.90$) was observed between the non-soaker percent and the total defect percent. No correlation was found between non-soakers, hydration coefficient and cookability. The results of this investigation indicate that *Rhizobium* inoculation is a promising fertilizer because it is cheap, easy to handle and improves plant growth and seed quality. The efficiency of inoculation could be improved with the addition of biological, chemical or organic fertilizers. Generally, fertilization of faba bean with nitrogen, sulphur or chicken manure not only increased plant growth and yield, but also improved seed quality and nutritional value.

Key words: Cookability, Faba bean, Fertilizers, Hard-seed, Hydration coefficient *Rhizobium*

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