

## **Effect of EM on Root Growth, Rhizobium Development and Green Pod Yield in Broad Bean**

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**Abstract :** *Broad bean (Vicia Faba L.) is one of the important income-generating winter vegetable crops grown by small farmers of the hills both in subsistence and semi-commercial scale. The areas under this crop (green pod and grain production) have been increasing sharply in recent years due to increase of both internal and external markets. However, the productivity of this crop is declining due to poor soil fertility, poor nutrient supply, crop damage by rust disease and poor plant growth caused by drought during growing season.*

*With the objectives of addressing these problems, a field trial was carried out at Horticulture Research Division of NARC at Khumaltar, and Nakhu Brighter Agriculture Research and Development Center, Nakhu-Nepal to assess the effects of different methods of EM application with or without organic manure and inorganic fertilizers. The results showed that highest nodule number, root number and fresh root weight were produced by the use of EM compost treatments in soil before transplanting. The result also revealed that the nodule number, root number and fresh root weight were further increased with the addition of foliar application of EM to the plants at 7 days and 15 days intervals. However, application of EM at 15 days interval is more effective than that of 7 days interval. Similarly, the highest green pod yield per plot was produced by NPK+EM compost treatment and this was followed by NPK+non-EM compost, NPK and EM compost treatments. The yields were further increased with the additional foliar application of EM at 14 or 15 days interval. The rust disease was significantly reduced by foliar application of EM in plants at 7 days interval. Foliar application of EM was more effective in preventing or controlling rust disease when application of EM compost in soil before transplanting was made.*

*In a country like Nepal, use of chemical fertilizers and fungicides is beyond the reach of the large proportion of farmers due to various reasons. In our present study, it was observed that EM is capable of substituting or gradually replacing the use of chemical fertilizers and fungicides for increasing the soil fertility, preventing disease and improving the crop productivity in the presence of organic manure.*

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