

EFFECT OF COIR DUST AND NITROGEN SUPPLEMENTATION
(NITROGEN FERTILIZER AND INOCULATION) ON DINITROGEN FIXATION
IN WINGED BEAN (Psophocarpus tetragonolobus (L.) DC.)

By

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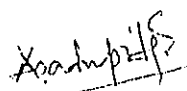
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ABSTRACT

A field experiment was conducted at Meewathura Agricultural Experimental Station, Peradeniya to study the effects of coir dust, nitrogen fertilizer and inoculation on dinitrogen fixation and yield of winged bean.

The treatments used were 0 , 2.5 and 5.0 t/ha coir dust with 0 , 75 , 150 kg N/ha as urea and inoculation of multistrain rhizobia (KUL-JN, KUL-GP and KUL-BH) in factorial combination. The winged bean selection SLS 40 was used. The plant parameters, nodulation , acetylene reduction activity, root, shoot and tuber dry weight, nitrogen content of shoots and yield were recorded. The soil parameters measured were field capacity and pH.

The interactions between the 2 factors (coir dust x nitrogen supplement) were not significant for all parameters measured. The application of 2.5 and 5t/ha coir dust on winged bean selection SLS 40 showed a higher biological dinitrogen fixation and yield, however the increases were not significant. The application of 5t/ha coir dust significantly increased the root, shoot and tuber dry weight over 0t/ha coir dust. The inoculation with the multistrain inoculum produced no significant increase in dinitrogen fixation and yield. The application of increasing doses of nitrogen fertilizer increased the shoot dry weight. The difference in dry weight was significant between 0 kg N/ha and 150 kg N/ha. Nitrogen content of shoots also followed the same trend though the effect was not significant. The tuber yields were also significantly increased with urea. The increases were 12 and 20 percent over the control at 75 kg N/ha and 150 kg N/ha respectively. The addition of 75 kg N/ha increased the yield significantly. The application of 150 kg N/ha increased the yield significantly, but reduced the symbiotically

fixed nitrogen. The increases of fresh pod yield were 15 percent and 32 percent over the control at 75 and 150 kg N/ha respectively. The seed yield also increased with 10 percent and 13 percent respectively.

A reduction of pH of the soil was observed with increasing doses of coir dust, but not at a significant level. The application of increasing doses of coir dust showed a significant increase in field capacity of the soil.

