

## Effects of *Canavalia ensiformis* and *Mucuna pruriens* intercrops on *Pratylenchus zeae* damage and yield of maize in subsistence agriculture

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### Abstract:

Host status of four leguminous cover crops [*Canavalia ensiformis* (L.) DC. (Jack bean), *Crotalaria ochroleuca* G. Don (Sunnhemp), *Lablab purpureus* L. (Hyacinth bean) and *Mucuna pruriens* (L.) DC. (velvet bean)] to *Pratylenchus zeae* Filipjev and effects of intercropping *C. ensiformis* and *M. pruriens* with Pan5195, H627 and Emap11 maize cultivars on *P. zeae* population and disease severity on maize were determined in greenhouse and field tests. *Pratylenchus zeae* significantly ( $P<0.05$ ) reduced growth of *C. ochroleuca* by 36% but had no effect on *C. ensiformis*, *M. pruriens* and *L. purpureus*. While *C. ensiformis*, *M. pruriens* and *L. purpureus* reduced *P. zeae* population, *C. ochroleuca* increased it. In the greenhouse test, intercropping maize with *C. ensiformis* significantly ( $P<0.05$ ) improved maize growth by up to 34%, Nematode populations in the roots of maize intercropped with either *C. ensiformis* or *M. pruriens* were significantly ( $P<0.05$ ) reduced by up to 32% while nematode disease severity in these intercropping systems was reduced by up to 26%. In the field test, intercropping Emap11, Pan5195 and H627 with *C. ensiformis* significantly ( $P<0.05$ ) increased maize grain yield by 190, 29 and 22%, respectively. Intercropping H627 with *M. pruriens* significantly ( $P<0.05$ ) increased maize grain yield by 12%, but grain yields of Pan5195 and Emap11 declined by 79 and 40%, respectively. Root necrosis and soil nematode populations in the *C. ensiformis*–maize intercrop declined by up to 50 and 30%, respectively. Under pure maize stands, soil nematode populations increased by up to 35% in 90 days relative to the initial nematode population of three nematodes g<sup>-1</sup> of fresh soil.