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“Development on the margin”

## Effect of Different Biofumigant Brassicas and Mixed Cropping of Pea and Oat on their Growth and Yields

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### Abstract

A field experiment was set in April 2010 to investigate the effect of deep and shallow ploughed fields mulched with biofumigant brassica in the previous fall. The brassica differed in their levels of glucosinolate/isothiocyanate contents low (*Sinapis alba*), medium (*Raphanus sativus* conv. *oleiformis*) and high (*Brassica juncea*). These were grown from August to October 2009 as cover crops. Sole and mix cropping of pea and oat were studied to study the potential of the brassica crops on weeds, pea diseases and the mixture effects on nitrogen fixation, growth and yield.

In single pea cultures deep ploughed plots had less weeds as compared to shallow ploughed plots. In sole culture of oats and mixed cultures weeds were reduced. Sole pea crop had higher yield in deep ploughed field. In mixed crops pea seed yields were higher than the fifty percent of the sole pea cultures but oat yields were lower. Yields of peas grown in *S. alba* and *R. sativus* mulched plots in deep ploughed fields were somewhat higher. Disease severity data indicates that the brassicas did not differ in their effect on pea root disease. Fungi were identified from infected pea roots among all the *Phoma medicaginis* was dominant followed by *Fusarium* spp., *Mycosphaerella pinodes* and *Ascochyta pisi*. Except *P. medicaginis* there were relatively less pathogens when peas were intercropped with oat than in pea sole crops. At the end of the season plots with single pea had higher nitrogen, followed by mixes of pea and oat.

These initial results indicate that mixed cultures had profitable biomass, yield and nitrogen productions with less weed infestation. The biofumigation treatments had no differential effect on the parameters assessed.

**Keywords:** Biofumigation, biomass, disease severity, plough, sole and mix cropping, weed, yield