



ABSTRACT BOOK

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Why scaling up cowpea inoculated with effective native rhizobia should be good for soil health and yields in Yen Bai Province of Northern Vietnam?

Laetitia Herrmann^{1,2}, Trung Thanh Nguyen^{2,3}, Dung Le Viet⁴, Esther Fouillet^{2,5}, Mary Otieno², Timothee Herviault^{2,5}, Lambert Brau¹, Didier Lesueur^{2,6}

¹ Deakin University, Australia

² CMBP at the Alliance in Hanoi

³ VNUA, Vietnam

⁴ NOMAFSI, Vietnam

⁵ AgroParisTech, France

⁶ CIRAD, Eco&Sols, France

*Corresponding author E-mail: d.lesueur@cgiar.org

Abstract

Legume crops have long played a major role in sustainable cropping systems in Southeast Asia, representing up to 44% of the total cropped area in Myanmar for example. However, in Vietnam, due to increasing population pressure and demand for agricultural land, the current agricultural system is dominated by intensive practices that include conventional tillage, mono-cropping and overuse of mineral fertilizers.

Farmers in Northern Vietnam (Yen Bai province) rely on intensive monocropping fields of maize and cassava whilst facing serious issues of soil erosion and loss of natural soil biodiversity. Cowpea (*Vigna unguiculata* L.) is highly valued by farmers as it is locally consumed and easily sold at local markets at a good price. To reduce the damages caused by mono-cropping cassava, the intercropping cassava-cowpea system was tested by farmers and the impacts on soil health were assessed. Our results showed intercropping significantly enhanced macrofauna richness and evenness, increased diversity and abundance of soil microfauna as well as the abundance and richness of the total bacterial communities. Nodulation of cowpeas intercropped with cassava or maize in 2 districts showed that the natural nodulation of the legume plants remained limited regardless of the soil characteristics, seasons and landscape. Native strains were isolated, screened for their symbiotic effectiveness and successfully tested under field conditions to compensate for the total absence of commercial rhizobial inoculants for cowpeas on the market. The high expansion rate of intercropping with cowpeas shows the high adoption level of these agroecological practices by local farmers and justifies our current efforts to scale it up. Future projects will focus on further testing and legume intercropping promotion and dissemination to increase soil health and farmer incomes in mountainous regions of Vietnam.

Keywords : cowpea; intercropping with legumes; soil health; rhizobia; Field inoculation