Proposed cropping systems and evolution of DMC adoption

Pigeon pea (Cajanus cajan) is successfully tested as cover crop for corn to replace Stylo (Stylosanthes guianensis) on this highly-alkaline Mollisols soil with pH 6.5-8.0. For its possible competition, especially on poor soils with low fertilization, pigeon pea is sown 10-15 days after corn sowing in the inter-row. The network of pre-extension increased from 2 target villages, few households and hectares in 2009, to 4 villages, 200 ha and 64 household in 2013, even facing yield damage due to long drought span in 2012, and ending with the 300USD ha⁻¹ free-interest credit on inputs and services. The farmers are convinced by no-till on crop residues, saving the cost of soil preparation, higher flexibility regarding the sowing date, and soil restoration improvement. However, they are still reluctant to investing additional labor for sowing of pigeon pea.

Yield performance and gross profit margin (GPM)

Irrespective to the years of DMC practice, the yield of corn under DMC management was similar to those observed under conventional management, expected under higher fertilizer level (70N-30P₂O₅-30K₂O) where higher yields were observed under DMC. As a result, the GPM of DMC plots were lower than those under conventional plow-based management (CT), except in 2013.

![Yield performance and gross profit margin (GPM)](image)

Note: Bars indicate the mean; Number inside the bar is number plot; bar caps represent the standard error; DMC-1 means 1 year DMC practice

Conclusions

- Farmers are convinced by no-till sowing on crop residues, to save cost and to preserve the soil potentialities. However, any additional cost or labour input impair the use of cover/relay crops, such as no-till sowing of mungbean or pigeon pea.
- Training and communication are also one of the main issues to promoting DMC cropping systems. Improvement in know-how and skills of both smallholders and extension agents is needed.
- Giving additional value to the cover/relay crops (cash and/or animal feeding), facilitating the access to credit with low interest rate (subsidy for payment for environmental services) through farmer cooperative will boost the adoption of DMC cropping systems.