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## ***Pueraria phaseoloides* Fallows Improve Labour Efficiency and Productivity of Cassava Systems in the Forest Zone of Cameroon**

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### **Abstract**

Southern Cameroonian farming systems on inherently infertile Ultisols comprise fallow phases to maintain crop productivity. Cassava, the main staple food, is gaining importance as a food cash crop commercialised. However, yields are low and fields are small (0.15–0.25 ha), due to high labour demand, inefficient manual field operations, and seasonal labour scarcity. A factorial fallow type × tillage system × intercrop on-farm trial aimed to identify technologies that minimise labour demand in small holder cassava systems, while maintaining or improving cassava productivity.

Cassava yielded 20.1 t ha<sup>-1</sup> fresh roots after *Pueraria phaseoloides* dominated fallow (improved fallow), compared to 17.0 t ha<sup>-1</sup> after fallow dominated by *Chromolaena odorata* (natural fallow). Ridge tillage attained 21.7 t ha<sup>-1</sup>, compared to 16.5 t ha<sup>-1</sup> after no-till treatment. Intercropping with maize had no effect on cassava performance compared to sole cassava. Maize yield was not affected by fallow type, yet ridging doubled grain yield from 0.51 to 1.0 t ha<sup>-1</sup>. To cultivate the *P. phaseoloides* plots, 129 labourdays ha<sup>-1</sup> were required, 22% less than after natural fallow. To cultivate the no-till plots, 132 labourdays ha<sup>-1</sup> were required, 12% less than for ridge tilled plots. Intercropping with maize did not significantly increase total labour requirements, but additional maize revenue increased labour productivity from 14\$ labourday<sup>-1</sup> in sole cassava to 23\$ labourday<sup>-1</sup> in cassava-maize intercrop. Cassava planted after *P. phaseoloides* fallow, intercropped with maize and ridge tillage was with 34\$ labourday<sup>-1</sup> and 2600 \$ ha<sup>-1</sup> most labour efficient ( $p < 0.01$ ) and most profitable ( $p < 0.01$ ) compared to all other treatments. *Pueraria phaseoloides* fallow alone significantly increased labour productivity and profitability by 64 and 63% respectively compared to natural fallow. Largest labour-savings were achieved during the peak labour demand period of planting season.

To increase adoption rates of the *P. phaseoloides* improved fallow rotation technology in forested areas and derived savannahs like in south-central Cameroon, farmers should be made aware of the immediate labour-saving effects and the increased profitability rather than the long-term soil fertility improvement. Higher profitability of cassava crop will subsequently improve commercial orientation of cassava growers and improve and diversify revenues.

**Keywords:** Agronomy, cassava, improved fallow, labour, pueraria