

## Net and Potential Mineralization of Nitrogen from Soil with Sugarcane Vinasse

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The increasing ethanol production represents many advantages to Brazil, as a less pollutant renewable fuel. But, it generates higher quantities of a residue called vinasse, originated on average of 10 to 15 liters per liter of ethanol produced. This residue is applied as a fertilizer for sugarcane, however, it presents a potential risk to soil quality and ions leaching, when high rates are applied to the same area during several years, so, one solution is to transport it to distant soils, but increasing costs. To produce ethanol in Brazil is common to use a mix of sugarcane juice and molasse (must), so the vinasse from this must will be called in this paper as vinasse from mix must (MMV). To transport to far distances, the vinasse can be concentrated (CV), reducing volume by evaporation process aimed to reduce transportation costs.

The objective of this study was to evaluate the accumulated net and potential nitrogen mineralization ( $N_m$  and  $N_0$ ) from soil that received three doses of MMV and the CV. We observed that the  $N_m$  was proportional to the rates of N added by CV, and the total amounts of N ( $N_t$ ) were proportional to  $N_m$  and  $N_0$  at all doses. Nevertheless, for the MMV there was no correlation, because the MMV is a residue with large content of water, and, in the dose 3 was added twice the recommended amount of vinasse, promoting anoxic conditions, and probably, N losses by denitrification. The mineralization rates ( $k$ ) for MMV was higher than CV, representing that mineralization occurs faster for MMV than CV, indicating that the CV can provide N for more time for crops with less susceptibility to leaching losses. The application of CV resulted in increased microbial activity, measured by  $CO_2$  evolution. The half life of N in the soil from CV was approximately 6 weeks, regardless of dose, and for MMV, regardless of the applied dose, the half life was almost 3 weeks.

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