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INTRODUCTION
Arable soils and management practices constitute a major source of uncertainties in predicting C fluxes. This uncertainty is mainly due to antagonistic practices effects on SOC and is further greater when we consider national scale with some missing data. Modelling represent a valuable tool to better understanding and quantifying process that control SOM turnover. In this study, we used CENTURY model V. 4.5 to simulate the SOC dynamics in three long-term experiments in order to validate the model under French pedo-climatic conditions for different crop management. Here, we present first results of changes in SOC stocks and pools dynamics in response to different Exogenous Organic Matter (EOM) and inorganic P fertilization.

METHODS
- Three long term experiments (>10 years): Feucherolles (A), Colmar (B) and Mant (C) France.
- Different (EOM) : cattle manure (CM) and urban waste (UW) (Feucherolles, Colmar), (high P) and without inorganic P (0 P) fertilizers (Mant).
- The CENTURY ecosystem model V.4.5 was spin-up through two different blocks to achieve the equilibrium and for C pool initialization.
- The equilibrium sequence blocks (ESB) spanning 3000 years: (1) with 3-year rotation: wheat, oat and fallow (called maggese) [1] and (2) annual grassland
- ESB were followed by two blocks: (1) the current management crop for decades with less fertilization and moderate tillage and (2) the experiment.

RESULTS and DISCUSSION
- Despite the SOC stocks difference between the two ESB, at equilibrium, similar OC pools proportions were observed for the maggesse and grassland with 39,5% and 50% of OC for slow (som2c) and passive (som3c) pools, respectively, (fig.1).
- Preliminary analysis showed that the model offer good predictive performance for SOC stocks (Table. 1), except for Colmar UW and control treatments.
- EOM increased essentially the slow C pool rather than passive or active pools.
- Simulation results for Mant and Colmar showed great bias in C grain suggesting the need for model calibration under French pedo-climatic conditions and crops.

Conclusion
Based on all these results, the model will be calibrated and soil and crop parameters will be optimized to better predict SOC dynamics at the territory scale, with consideration of initialization issues.

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