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In this study, we proposed to use mechanical properties of soils deduced from compression curves as characteristics of soil structure to trap the effects of cultivation practices, especially in alternative tillage systems. Mechanical parameters studied were the pre-compression [U+F020] stress and the compression index C_c classically related to physical properties of soils such as texture, water content and bulk density. All compression curves were performed at $pF\ 2.5$. In the loamy soils, sampled in two locations of the French Parisian basin, this value corresponds to water content at which compaction risk is maximum. We systematically compared the mechanical behaviour of remoulded and undisturbed soils samples. On both sites cultivation practices did not change the linear relationship of C_c with the initial void ratio. Thus this parameter can be used to predict the intrinsic sensitivity of soil to compaction. On the contrary, the relationship observed between the pre-compression pressure and the initial void ratio on remoulded samples disappeared and no correlation was observed in both situations. This result suggests that for a given soil, pre-compression pressure is sensitive to the initial soil structure of the undisturbed samples and therefore can be used as an indicator of the effects of cultivation practices on soil structure.