



## Impact of cover crops on soil compaction for crop-livestock integrated systems in the southwestern of Brazilian Amazon

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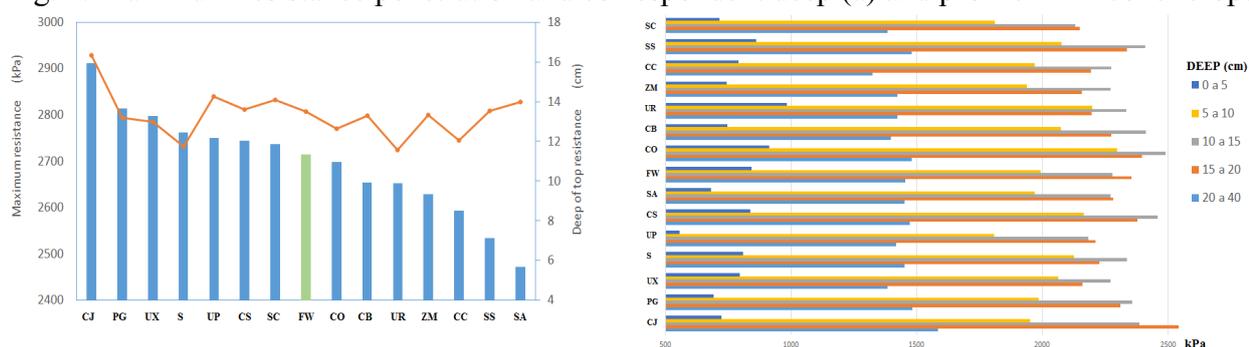
**Introduction** Soil compaction and its deleterious consequences are well known throughout the agricultural farming systems. Subsoil compaction has become a growing concern due to the increase of animals use pasture in cropping areas. Frequent and heavy animals traffic may modify the soil compaction in crop-livestock integrated systems (CLS), increasing soil density and soil resistance to penetration and reducing macro and total porosity with consequences to the growth and yield of crops. Cover crops can increase soil organic matter, improving physics soil quality, even breaking down previously compacted soil layers.

### Material and Methods

In order to evaluate the response of several cover crops in a CLS under no tillage an experiment was carried out in the southwest of the Amazon, Rondonia. Fourteen cover crop [*Urochloa ruziziensis* (UR), *U. brizantha* cv Xaraés (UX), *U. brizantha* cv Piatã (UP), *Canavalia brasiliensis* (CB), *Cajanus cajan* (CC), *Crotalaria juncea* (CJ), *C. ochroleuca* (CO), *C. spectabilis* (CS), *Zea mays* (ZM), *Pennisetum glaucum* (PG), *Stizolobium aterrina* (SA), *Stizolobium cinereum* (SC), *Sorghum bicolor* (SB) and *Sorghum sudanense* (SS)] were sowed in March 2014. The control treatment consisted of natural fallow. In October 2014 the soil penetration resistance (0-40 cm deep evaluating each cm), the maximum resistance and the correspondent deep, in each treatment, were evaluate through an automated penetrometer (Lima et al., 2013).

### Results and Conclusions

Fig. 1. Maximum resistance penetration and correspondent deep (a) and profile in 14 cover crops



The highest maximum resistance penetration were obtained from the *Crotalaria juncea*. The plants CO, CB, UR, ZM, CC, SS and SA provides maximum resistance penetration lower than the the control treatment (fallow). The average deep of the compact layer were 13,3 cm. The plants CJ, CS, CO, CB and SS provided the highest resistance to penetration in 0 to 15 cm deep in soil layer. The selection of appropriate cover crops can influence the soil compaction in a CLS under no-till.

### References cited

Lima et al. (2013) Rev. Ceres

**Acknowledgements** Embrapa