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Decomposition of cover plants with potential use for crop-livestock integrated systems in the southwestern of Brazilian Amazon

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Introduction

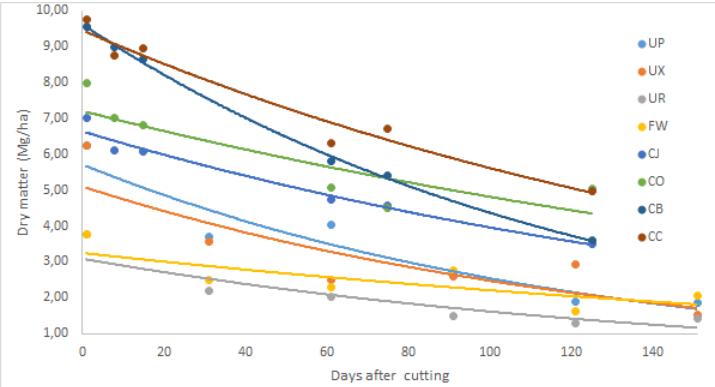
In crop-livestock integrated (CLS) systems, the use of ground cover plants is preponderant as a best agronomic practice. Avoiding erosion of the soil, increasing soil organic matter, improving soil quality, promoting carbon-sequestration and boosting the water efficient use are some benefits of the cover crops use. It is expected that plants of genre Urochloa provide very recalcitrant straws and legumes plants, in opposite, with lower C/N ratio, provide labile straws.

Material and Methods

In order to evaluate the response of several cover crops in a CLS under no tillage was carried out in the southwest of the Amazon, in Porto Velho, Rondonia. The experiment began in March 2014 after soybean crop in the summer. The straw of the *Urochloa ruziziensis* (UR), *U. brizantha* cv Xaraés (UX), *U. brizantha* cv Piatã (UP), *Canavalia brasiliensis* (CB), *Cajanus cajan* (CC), *Crotalaria juncea* (CJ) and *C. ochroleuca* (CO) were evaluated using litter bags. The control treatment consisted of natural fallow. Two cuts in UP, UX and UR were performed to simulate grazing effect. The mathematical model of the exponential type ($X = X_o e^{-kt}$) were used (Torres at al., 2015).

Results and Conclusions

Fig. 1. **Curve of degradation of straw of cover crops.**



The highest dry matter yields were obtained from the CB and CC plants. The UP and CB presented faster decompositions. Except the UR, all the treatments presented higher biomass yield than the control (fallow). The fallow treatment did not presents suitable R^2 value in the model of degradation.

The Urochloa species presented lower biomass yield in the initial time due the previous cutting to simulate the grazing effects. Among them, the UR provided 39.2 and 45.6% less dry biomass than UX and UP, respectively. The evaluated cover crops can represents values alternatives to compose crop-livestock integrated (CLS) systems in the Amazon.

Table 1: Parameters of degradation of straw

Treatments	X_0	k	T½life	R^2
UP	5,7	0,008	87	0,92
UX	5,1	0,007	99	0,77
UR	3,1	0,006	116	0,83
FW	3,2	0,004	173	0,60
CJ	6,6	0,005	139	0,98
CO	7,2	0,004	173	0,73
CB	9,6	0,008	87	0,99
CC	9,5	0,005	139	0,96

$X = X_o e^{-kt}$

X= dry biomass remaining after a period of time (t)

Xo= initial amount of dry biomass

k= constant of the residue's decomposition

References cited Torres at al., 2015, Rev. Ciên. Agronô. v.46. 2015

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