

## **THEME 1 | ANIMAL PRODUCTION SYSTEMS**

### **Beef cattle production in crop-livestock-forestry systems**

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The use of integrated systems had been presented as an option to improve livestock production systems. This study aimed to evaluate beef cattle production systems. The experiment was carried out at Embrapa Agrossilvipastoril, Sinop/MT, from August/2015 to July/2016, follow a randomized complete block design, with four systems and four replications, totaling 16 experimental units (2 ha each). Four production systems were evaluated: livestock (L) – palisade grass (*Brachiaria brizantha* cv. Marandu) pastures; livestock-forestry (LF) integration – palisade grass pastures with triple rows of eucalyptus (*Eucalyptus urograndis*, H13 clone), spaced 3 m between trees, 3.5 m between rows, and 30 m between ranks and height of 18 m; crop-livestock (CL) integration – soybean crop (*Glycine max* L.), succeeded by maize (*Zea mays* L.) as the second crop sown along with palisade grass, which was used in the first 2 years to create a straw coverage of the soil for the no-till system implemented, and then used as first year pasture; and crop-livestock-forestry (CLF) – first year palisade grass pastures, after two years of crop as describe in CL system, with single rows of eucalyptus, spaced 3 m between trees, 37 m between ranks and height of 18 m. Nellore steers used in the experiment had an average initial weight of 344 kg, in continuous stocking (30 cm of height) and variable stocking rate. The data was analyzed using PROC MIXED (SAS<sup>®</sup>; P<0.05). Total herbage accumulation (THA), average gain weighted (AGW), average stocking rate (ASR) and gain per area (GPA) were affected by the systems (P<0.0001). Livestock systems were pastures were preceded by crop (CL and CLF) registered, an average, higher AFT (21475 kg ha<sup>-1</sup>) and ASH (2.70 UA ha<sup>-1</sup>). Moreover, in CLF systems [single rows of eucalyptus (*Eucalyptus urograndis*, H13 clone), spaced 3 m between trees, 37 m between ranks and 18 m of height] Nellore steers gained 740 g d<sup>-1</sup>, follow by CL (686 g d<sup>-1</sup>). L and LF systems had lower AFT (14145), ASH (2.1 UA ha<sup>-1</sup>) and AGW (561 g d<sup>-1</sup>) values than intercropped systems. It results in a greater GPA in CLF system (30.9 @ ha<sup>-1</sup>), 27.3% higher than iCL (24.3 @ ha<sup>-1</sup>), and 66% higher than L and LF (19.2 @ ha<sup>-1</sup>). Synergy between crop, livestock and forestry components promotes higher productivity. The adoption crop-livestock-forestry systems is an alternative for intensification of beef cattle production.

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