Income from agricultural and livestock activities in integrated crop-livestock systems on Cerrados of Maranhão

Marcos L TEIXEIRA NETO[1], Raimundo B ARAÚJO NETO[1], Diógenes M P AZEVEDO, Marcílio NL DA FROTA[1]
[1] Embrapa Meio-Norte, Av. Duque de Caxias 5650, Teresina PI.
E-mail address of presenting author*: marcos.teixeira@embrapa.br

Introduction - The cerrados of Maranhão have stood out in grain production during the rainy season. However, the agricultural areas remain idle after grain harvest until the end of the dry season. An alternative for diversifying and intensifying the use of these areas is the crop-livestock integration system (CLI). The strategy used in this work consisted of evaluating a representative farm in the region in which the land use history was partly based on monoculture using soil tillage with disc harrows, and partly based on no-tillage seeding on a millet mulch. The prevailing activities in the farm were soybean - with an average crop yield of 47 bags (60 kg)/ha, corn - with an average crop yield of 132 bags (60 kg)/ha, and a small area dedicated to cattle production. This work aimed at assessing and validating an integrated production system under real conditions over time. It aimed also to introduce and disseminate the crop-livestock integration system in the cerrados of Maranhão.

Material and Methods - The study was carried out at Santa Luzia Farm, in São Raimundo das Mangabeiras, MA. The farm is located at 6º49'48" S and 45°23'52" W, with 475 m of altitude. Activities were initiated in the 2003/04 cropping season in an area of 2 ha of maize intercropped with *Brachiaria brizantha*. Initial results led the farmer to expand the area to 43 ha in the 2004/05 cropping season and to substitute the forage grass to *Brachiaria ruziziensis*. The size of the area under this system was increased every year. In 2013 the area of corn intercropped with *B. ruziziensis* followed by soybean under no-till system reached 1,000 ha. The feasibility of the direct seeding of soybean on the *B. ruziziensis* and millet mulch was evaluated over eight successive cropping seasons. We also evaluated the cattle production during the off-season (dry season) in pastures formed in the intercrop. The stocking rate used was 2 AU/ha, which is equivalent to 2.26 animals/ha

Results and Conclusions

The corn yield ranged from 137 to 168 bags (60 kg)/ha, with an average of 153 bags (60 kg)/ha. This is higher than that obtained up to 2004, before the establishment of the CLI system (132 bags [60 kg]/ha). Yield of soybean sowed on *B. ruziziensis* mulch ranged from 57.1 to 63.0 bags (60 kg)/ha, with an average of 59.7 bags (60 kg)/ha. This was also higher than the crop yield of soybean cultivated on the millet mulch (52.0 bags [60 kg]/ha) and the average of the soybean crop yield obtained in 2004 (47 bags [60 kg]/ha). The soybean grain yield increase in the CLI system was, therefore, 7.7 bags (60 kg)/ha higher than that of soybean sowed on millet mulch and 12.7 bags (60 kg)/ha higher than that obtained in 2004, before the establishment of the CLI system. The average weight gain of steers at the end of 120 days was 4.08 @/animal, resulting in an average weight gain of 9.8 @/ha. The results obtained led the farmer to adopt the system as a farm exploration strategy, which indicates the feasibility of the CLI system in Maranhão State.