



world congress on integrated
crop-livestock-forest systems

3rd International
Symposium on Integrated
Crop-Livestock Systems

towards sustainable intensification
brasilia • brazil • 2015

Congress Proceedings

Anais do Congresso

These Proceedings organize the papers and abstracts presented at the 2015 World Congress on Integrated Crop-livestock-forest systems (WCCLF) incorporating the Third International Symposium on Integrated Crop-Livestock Systems, held from July 12 to 17, 2015, at the Ulysses Guimarães Convention Center in Brasília, DF.

The objective of the Congress was to discuss the state-of-the-art of integrated agricultural systems as well as its perspectives as main 'drivers' of sustainable intensification on agriculture all over the world. The event was organized and promoted by the Brazilian Agricultural Research Corporation and the Federal University of Rio Grande do Sul, with the support of many national and international institutions including CIAT, CIRAD and USDA.

The event was based on three pillars. Plenary presentations of international scientific results on ICLF systems; technical training of technicians with focus on existing recommendations; and teaching conferences to discuss inclusion of the ICLF in the Universities agendas.

Scientists, experts, technicians, professors, students and leading producers of different fields participated in the Congress, which was organized into three main topics: technology, environment and social economy. The subjects distributed in many topics in the agenda include issues related to global agriculture sustainability; opportunities and limitations on the adoption of integrated systems; environmental costs of intensive agriculture; contributions of integration for family farming; efficient use of water and nutrients; carbon sequestration and greenhouse gas emissions, among others.

More than 350 scientific papers were selected for presentation. Forty of these scientific submissions were chosen for oral presentation, arranged in ten parallel sessions. The other submissions were presented in poster format, and remained displayed in the panels during the entire event. This present publication is divided in three sessions: Abstracts of plenary speakers, Abstracts of Oral Presentations in parallel sessions and Posters' Abstracts.

RESULTS

The program of the Congress, both technical and scientific, was substantial and produced significant statistics. A total of 24 scientists participated in the Plenary Session, from several different countries including five from Brazil. The two Special Sessions, for technicians and for teaching, had 23 presentations. A total of 907 attendees were pre-registered and 602 were present at the event. Twenty six Brazilian states were represented as well as 22 countries. Two hundred and twenty eight public and private institutions were represented by different attendees. Three hundred and fifty four submitted papers were presented either as posters or as oral presentations. The total of 1,075 co-authors contributed with scientific papers submitted. An intensive debate was encouraged in the teaching Special Sessions in order to discuss the inclusion ICLF systems courses in the universities and technical schools. Professors, students and technicians appointed limitations in the curricular plans and course programs. They proposed alternatives, new procedures and recommendations to improve ICLF disciplines, considering the complexity of the systems and the need of a systemic multidisciplinary approach of this subject



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

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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 6°49'48" 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.

Socio-economic benefits and impacts of change to diversified systems




 **Marcos Lopes Teixeira Neto**

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