



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

Soil mechanical resistance to penetration (SMRP) in an Oxisol under different integrated crop/livestock systems (CLS)

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Introduction The high values of SMRP indicate reduction of soil water infiltration and high levels of soil erosion. Integrated CLS include forest and pastures. The SMRP of soils managed with CLS can be affected by cattle trampling (Fontaneli et al., 2010). However, by taking advantage of the fertilizers residues applied in annual crops, pastures cropped in these systems have greater vegetative growth and root, which may favor the mitigation effect of trampling. The forest dry leaves and living roots can increase the SOM of these systems, improving soil structure.

Material and Methods

The experiment was established in a randomized block design with 4 replications. The CLS production systems evaluated are: 1. Forest eucalyptus; 2. Annual crop in no till soybean followed by corn intercropped with *Brachiaria brizantha* cv. Marandu; 3. Pasture; 4. Annual crop-pasture (2 yrs. each); 5. Pasture-annual crop; 6. Annual crop-Forest; 7. Pasture-forest; 8. Annual crop-pasture-forest; 9. Pasture-annual crop-forest; 10. Annual crop+pasture-forest. The SMRP measures were taken to 40 cm depth with a Falker electronic penetrometer.

Results and Conclusions

After a 3-yr period continuous cropping differences between the treatments were observed (Fig. 1). The lowest SMRP values in 0-5 cm layer are results of the crop sowing operations, formation of large amounts of root mass in pastures and the accumulation of leaves of eucalyptus trees. The SMRP values are below the critical levels. After 3-yr is not yet possible to distinguish the effects of soil use and management on the SMRP; the effect of the scarifier is perceived still until the treatment 1 in 30 cm deep; the treatment showed 3 highest values of SMRP due traffic compression.

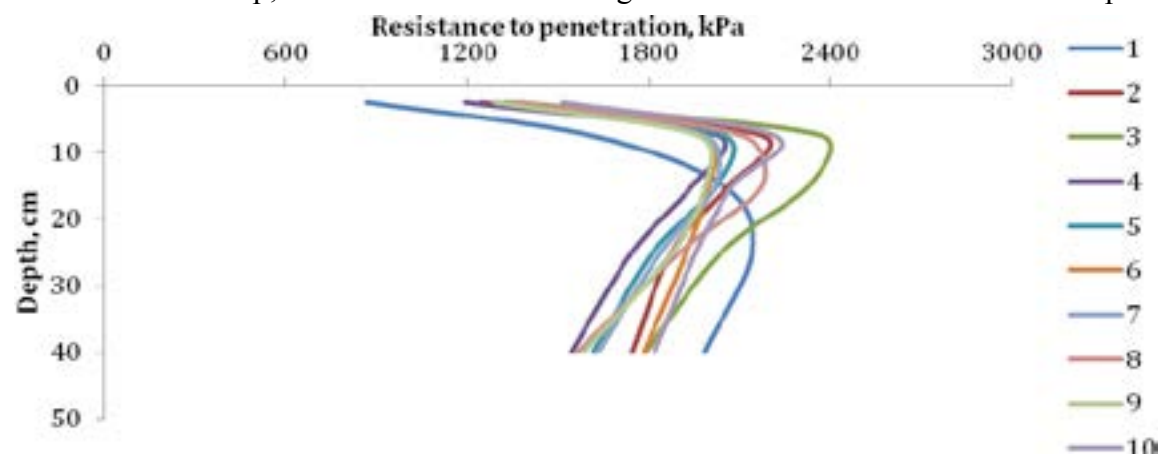


Fig. 1. The SMRP at 40 cm depth under different CLS 4 yrs. after establishment. Data are means of 4 replicate of 20 points/plot. 1. Eucalyptus; 2. Annual crop; 3. Pasture; 4. Annual crop-pasture (2 yr each); 5. Pasture-annual crop; 6. Annual crop-Forest; 7. Pasture-forest; 8. Annual crop-pasture-forest; 9. Pasture-annual crop-forest; 10. Annual crop+pasture-forest.

Reference cited


Fontaneli et al. (2010), Annals of V SIMFOR, p.137-170. UFV, Viçosa, Brazil.

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 **Silvio Tulio Spera**

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