

**Book of Abstracts**

# **1<sup>st</sup> World Congress of Agroforestry**

*Working Together for  
Sustainable Land Use Systems*

**27 June – 2 July 2004**

**Orlando, Florida, USA**



Congress website: [conference.ifas.ufl.edu/wca/](http://conference.ifas.ufl.edu/wca/)

## FOREWORD

This Book contains the abstracts of papers that were selected for presentation at the 1<sup>st</sup> World Congress of Agroforestry (WCA), 2004. Except for the abstracts of 29 invited presentations for seven symposia included in the beginning of the book, all were voluntary submissions for oral or poster sessions.

In preparation for the Congress, we solicited potential participants to submit abstracts for presentation during oral and poster sessions. The response vastly exceeded our expectations: we received more than 800 voluntary submissions from all over the world. The abstracts were sent to the respective WCA session organizers for their scrutiny and decision on their acceptability for oral or poster presentations. Although the session organizers were requested to be as accommodative as possible in making their decisions, quite a few abstracts had to be rejected as they were deemed unrelated to agroforestry even by the broadest definition of the term. The authors were then given the opportunity to submit revised and updated abstracts. The final selected abstracts were then edited for uniformity in length (maximum 250 words), presentation format, and language. Because of the volume of work that had to be accomplished within a tight time schedule, the edited versions could not be sent back to the authors for their approval; we request the authors' understanding and forbearance for this. At the time of sending this to the press, some authors' attendance in the Congress and presentation of their work are still uncertain because of financial and administrative reasons. Nevertheless, all abstracts processed as above are included in this book with the authors' approval.

Undoubtedly, this Book of Abstracts represents the current state of information and knowledge in agroforestry worldwide. Several of these presentations will be developed as full-length journal articles for the special issues of thematic journals that will feature Congress presentations (at the time of this writing, arrangements have been confirmed for special issues of seven scientific journals). But, for the majority of the abstracts that may not be published as professional and academic publications, this Book of Abstracts will remain the only source of reference. Thus, we believe that this book will be a valuable resource for future use. The book will also be made available to Congress participants as a CD, and the abstracts will be posted on the Congress Web-site (<http://conference.ifas.ufl.edu/wca>), and retained for several months after the Congress.

Compiling this Book of Abstracts involved the efforts of a number of individuals. I wish to express my sincere appreciation to my colleague Dr. Samuel Allen of the Center for Subtropical Agroforestry (CSTAF), University of Florida (UF), who edited the final abstracts for technical language, length, content and style. Other CSTAF colleagues, notably Dr. Michael Bannister and Ms. Julie Clingerman, provided considerable support and assistance to Dr. Allen in accomplishing this task. Special thanks are due to the Congress Coordinator, Ms. Mandy Stage, who with the assistance of Ms. Tracy Nininger and others at the UF Office of Conferences and Institutes, has handled effectively and tirelessly the myriad of logistics and communication associated with the development of this Book, including the final proofing and printing. Finally, I sincerely thank all the authors and session organizers, without whose cooperation and timely inputs this publication would not have been possible.

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## **Financial and Risk Evaluation of Multi-strata Agroforestry Systems in Rondônia, Eastern Amazonia, Brazil**

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The difficulties in establishing agroforestry systems (AFS) in tropical forests are quite numerous. AFS have been promoted for their biophysical, ecological and socioeconomic advantages; however, studies need to add financial and economic risk analysis aspects to reinforce AFS advantages. The objectives of this study were to analyze the financial return and the risk of investing in AFS traditionally used in the State of Rondônia, in the western Amazon region of Brazil. Financial analysis was based on the following forestry enterprise evaluation methods: Net Present Value (NPV), NPV for Infinite Horizon Planning (NPV\*), Annual Expected Value (AEV), and Benefit/Costs Ratio (B/C). Data were analyzed considering the respective cash flows of each AFS. Risk analysis for the AFS with better financial results was carried through the Monte Carlo simulation technique and processed by @RISK software, considering different levels of the harvesting costs, management operations, price of fruits and wood, and internal rate of return. The following multi-strata AFS, set in a clayey Oxisol, were tested: T1: Ca+Ba+Pm+Cp; T2: Fr+Ba+Pm+Cp and T3: Pu+Ba+Pm+Cp. While all the production systems were considered economically viable, T1: Ca-Ba-Pm-Cp showed the best profitability indicators, due to higher incomes provided since the first year of the horizon plan. Management operations and harvesting costs represented more than 70% of the total cost composition. Although these AFS incurred a high cost in terms of establishment and management, the investment may be considered of low risk, according to the use of the proposed methodology.

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## **Reaching Sustainability by Mechanization: Introduction of Mechanized Mulching Technology to Replace Slash-and-Burn Techniques in Tropical Fallow Systems**

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In eastern Amazonia, Brazil, forest-based fallow systems including slash-and-burn practices are still the most important small farmer land-use systems. Intensification of land-use while keeping the traditional agricultural practices, leads to a decrease of the system's productivity. A key factor of this degradation are the losses of organic matter and nutrients during slash burning: carbon and nutrients stored in the fallow biomass are released into the atmosphere by volatilization. If not burned, however, the fallow biomass can contribute considerably to the management of the soil organic matter in order to improve the physical, chemical and biological properties of the soil. Therefore, a tractor-propelled bush chopper was developed to replace the slash-and-burn practice with a fire-free chop-and-mulch technology by transforming the fallow vegetation into manageable mulch. Two chopper prototypes have been tested so far on small farmer land and the feasibility of the new technology could be proven. Additionally, a commercially available forest mulcher was also tested. Financial analyses revealed the economic viability of the chop-and-mulch approach, compared to the traditional system. Even though the newly developed chopper was designed for the transformation of fallow vegetation into mulch, new fields of application have emerged such as landscape conservation or biomass harvesting.

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