

RESUME
OUMAROU BADINI
AGRICULTURAL SYSTEMS EVALUATION & MODELING,
ENVIRONMENTAL SOIL & BIOPHYSICS

QUALIFICATION SUMMARY:

Dr. Badini's research and development interests focus on soil and agricultural systems evaluation/monitoring and the use of climatic forecasting, modeling and GIS tools to provide information to decision makers in order to increase food security and economic productivity in concert with conserving and improving the natural resource base. His expertise includes Field trials of Soil Fertility and Water Management, Rural Development, Agroclimatic Assessment, Drought Analysis & Management, Bioclimatology, Soil Water and Cropping Systems Modeling as well as GIS and Environmental Information System Management.

In addition to his technical expertise, Dr. Badini has extensive practical experience in development and implementation of development activities and programs encompassing training, research, community-based development programs, including USAID-financed projects in Africa, the Middle East and the United States. He is thus familiar with USAID and other donor strategies, regulations and requirements. Dr. Badini also has applied his skills in information technology to development of web pages, databases, newsletters and other forms of information sharing and dissemination. He has excellent team and intercultural skills, is fluent in French and has some Arabic.

EDUCATION:

- Ph.D. Soil Science/ Soil Physics & Environmental Biophysics, Washington State University, Department of Crop and Soil Sciences, 1997.
- M.Sc. Environmental Science/Natural Resources Management, Washington State University, Program in Environmental Science and Regional Planning, 1994.
- B.Sc. Rural Development Engineering, University of Ouagadougou, Burkina Faso; Institut du Development Rural, 1985.

Continuing Education, Seminars and Workshops:

- 2004 Regional Scientific Workshop on Land Management for Carbon Sequestration in West Africa. Palais de Congres in Bamako, Mali. February 26-27, 2004.
- 2004 Institutional Innovations and Development of Technologies for a Decentralized Natural Resource Management. Palais de Congres in Bamako, Mali. February 24-26, 2004.
- 2003 In Situ Measurement Group's Working Meeting. NASA Carbon from Communities Project. February 10-13, 2003. Beltsville, Maryland, USA.
- 2002 Impact Assessment of Agricultural and NRM Research Workshop. September 12-13, 2002, Washington D.C., USA.
- 2001 Research Synthesis Conference: "*Capturing Lessons & Looking Forward*". SANREM CRSP – November 28-30, 2001, Athens, Georgia. USA.
- 2001 Staff Development Training in ACCESS Series – Relational Database, Forms, Filters, Switchboards, Queries and Reports. Washington State University Human Resources Services, Pullman, Washington. October 2001. USA.
- 2001 Evaluation and Planning Meeting. SANREM West Africa. Madiama, Djenné, Mopti in Mali – February 2001. West Africa.
- 2001 Joint Meeting SANREM CRSP's Technical Committee, Board of Directors, and External Evaluation Panel held at Blacksburg, Virginia from January 3 to 5, 2001. USA.
- 1999 Joint Meeting SANREM CRSP's Technical Committee, Board of Directors, and External Evaluation Panel held at Watkinsville, Georgia from December 14 to 16, 1999.
- 1999 Conflict Resolution and Holistic Management workshop for SANREM Global Project and West Africa PI's held at Virginia Tech in August 1999. USA.

- 1999 Participatory Landscape and Lifescape Assessment of the villages of Tombonkan, Nérékoro and Madiama in the Commune of Madiama, Djenne Circle, Mali (West Africa). February 6-14, 1999.
- 1999 Sustainable Agriculture and Natural Resource Management (SANREM/West Africa) Participatory Landscape/Lifescape Appraisal planning workshop in Bamako, Mali. January 25-28, 1999.
- 1992 Participated in training on Computer Applications for Agricultural and Natural Resource Management. Oregon State University, Corvallis, Oregon.
- 1992 Participation at the joint meeting of the Ecological Society of America (ESA) and the American Institute of Biological Studies (AIBS). Honolulu, Hawaii, USA.

PROFESSIONAL EXPERIENCE:

- 1999-Present: Research Associate, International Programs/Development Cooperation (IP/DC). Principal Investigator and Head of Field Programs for the WSU portion of the USAID Sustainable Agriculture and Natural Resource Management Project (SANREM) in Mali, West Africa. Responsibilities include: Carry out and coordinate collaborative field research and training programs on weather assessment, soil fertility management, and cropping systems evaluation and modeling with U.S. University partners and Malian national research organization and local communities. Transfer soil fertility and water management technologies to farmers through training and demonstrations. Establish and Train Agricultural and Natural Resources Users Groups and Advisory Committee in Mali.
- 2002-Present PI for the WSU subcontract for the NASA funded project “Carbon from Communities: A Satellite View”. Specific duties include: soil nutrients and carbon measurements and analyses; grazing systems evaluation and modeling; evaluation of carbon sequestration potential and soil fertility improvements; development of weather/soil database and modeling.
- 2000-2002 Deputy Technical Coordinator for The Jordan Water Skills Enhancement and Information to Decision Makers (JWSE) project and Information Manager at the Washington State Water Research Center (WWRC). Duties: provide coordination, technical guidance and organization of short courses and experiential learning for the Jordan's Water Sector Project on "Skills Enhancement and Support to Decision-Makers"; Conduct and guide field visits and tours; conduct and support a variety of activities in the WWRC; carry out a variety of technical support and backstopping activities for WSU's international programs and activities.
- 1997–1998 Research Assistant/Technical Assistant II, Department of Crop and Soil Sciences, Washington State University, Pullman, WA. Project: Establish under controlled, growth Chamber conditions the feasibility of using foliar applications of chitosan (natural anti-transpirant) to induce drought resistance behavior in various plants. Duties: Design and implement research; monitor and measure transpiration, stomatal conductance, soil and leaf water potential and total dry matter production of different plants including pepper, sunflower, maize, potato, turf grass; record and maintain data; run computer statistical analysis, and prepare final report.
- 1994-1997 Graduate Research Teaching Assistant, Department of Crop and Soil Sciences, Washington State University, Pullman, WA. Duties: Research, design and implement research; collect data on weather, soil water, tree light interception, plant growth and transpiration; simulation modeling of crop nitrogen requirements, water, light, soil erosion and crop productivity in cropping systems. Teaching: Introductory Soil Science (SOILS 201); Environmental Biophysics & Soil Physics. Prepare and

conduct laboratory and discussion sections; help students with lecture and lab questions; assign writing, exercises and exams.

1985-1991: Associate Scientist, Institute for Environmental and Agricultural Research, Burkina Faso. Duties: Coordinator of the Farming Systems Research Program, Southwestern zone of Burkina Faso. Primary responsibilities include (1) handling administrative duties, supervising the research activities of a multidisciplinary team of 6 researchers and 10 technicians; (2) maintaining records and research data, and writing technical and final reports. Coordinator Liaison Research & Outreach, Western zone of Burkina Faso. Responsibilities include (1) Person-contact between extension workers and the researchers of the research station of Faroka-Ba; (2) Organization of field-visits for researchers and periodic training for extension workers and farmers. Research activities include: (1) Study of traditional livestock production systems; (2) Evaluation of natural pasture lands, analysis of grazing capacity, and nutritional improvement tests for farm animals; (3) Experimentation on cropping system rotations and tests on cultivated forage grasses and legumes in cropping systems to improve biomass production, reduce erosion, improve soil organic matter and fertility.

1982-1985 Natural Sciences and Biology Professor at John F. Kennedy High School in Burkina Faso.

CONSULTANCIES & LECTURES:

2003 - Lecturer for a training workshop (short course) on Cropping Systems Simulation Modeling (CropSyst Suite) and on Installation/Monitoring of Campbell Weather Station at the Agronomic Research Regional Center of Mopti, Mali. December 2-5, 2003.

2003 - Consultant for the International Center for Agricultural Research in the Dry Areas (ICARDA) and USAID for the Training and Installation of Automated Weather Stations (Campbell Scientific and Hobos) in Afghanistan.

1998 - Consultant for Washington State University International Programs/Development Cooperation. Assignment: Synthesis and Evaluation of Modeling Tools Applicable to Africa. Production of a research report titled: Evaluation of Agricultural and Environmental Sustainability in Africa Using Computer-based Tools.

1997 - Consultant for G.R. Simplot Company at Pasco, Washington. Assignment: Develop a model to predict planting and harvest dates for industrial sweet corn at different sites of the Columbia Basin of Washington. Product: Database and model provided; training for the model dispensed.

1989 - Consultant for the Research Center in Animal Trypanosomiasis (CRTA), Bobo-Dioulasso, Burkina Faso, to conduct an agropastoral survey of the grazing lands in the Poni province (Southwest Burkina). Production of a final report.

1988-1989 - Consultant for an agropastoral study of 3 village sites (Sao, Daman, and Daboura) in the Mouhoun province (West Burkina) for the Regional Center in Agricultural Extension (CRPA) Mouhoun - Dedougou, Burkina Faso. Duties include delineation of pastoral zones in each site, evaluation and inventory of pasture biomass production potential, analysis of livestock production systems, analysis and determination of grazing capacity and recommendation of strategy of exploitation for the grazing lands. Production of a final report.

RELEVANT SELECTED TECHNICAL REPORTS & PUBLICATIONS:

Badini O., C. O. Stockle, J.W. Jones, A. Kodio, and M. Keita, 2004. Analyzing Potential Increase in Productivity and Soil Carbon Using Rotational Grazing in Madiama Commune, Mali (West Africa). *(To be submitted to journal). Paper presented at the Regional Scientific Workshop on Land Management for Carbon Sequestration in West Africa. Palais de Congres in Bamako, Mali. February 26-27, 2004.*

Bostick W.M., O. Badini, J.W. Jones, R. Yost, C.O. Stockle, and M. Kodio, 2004. Ensemble Kalman

Filter Simulation of Carbon Dynamics in a Semi-Arid Rotational Grazing System. *Paper presented at The Regional Scientific Workshop on Land Management for Carbon Sequestration in West Africa. Palais de Congres in Bamako, Mali. February 26-27, 2004.*

Dioni L., and O. Badini, 2004. The Soils of Madiama. *Paper presented at the workshop on Institutional Innovations and Development of Technologies for a Decentralized Natural Resource Management. Palais de Congres in Bamako, Mali. February 24-26, 2004.*

Badini O., and B. Traoré, 2004. Sustainability and Biophysical Viability Analysis of Soil Fertility Management Practices in Madiama Commune, Mopti Region, Mali. *(To be submitted to Journal).*

Badini O. and L. Dioni, 2004. Landscape and Soil Characterization of Madiama Commune. *Chapter 3 for SANREM book on: Conflict, Social Capital and Managing Natural Resources (book contract signed with CABI).*

Badini O., and B. Traoré, 2004. Biophysical assessment of the Viability of Alternative Technological Improvement through Modeling in Madiama Commune, Mali. *Part I of Chapter 12 for SANREM book on: Conflict, Social Capital and Managing Natural Resources (book contract signed with CABI).*

Badini O., and M. Barber, 2003. Assessment of Dam Design, Construction, and Safety Codes and Guidelines. 74 pages. Jordan Water Skills Enhancement Project. Washington State University. IPDC and Environmental and Civil Engineering Department.

Wynne R., K. Moore, P. C. Doraiswamy, O. Badini, S.M. Toure, A. Ballo, 2003. Remote Sensing of Land Use and Carbon sequestration Changes in a Semi-Arid Agro-Pastoral System: Case in the Commune of Madiama, Mopti Region, Mali. *Paper Presented at the AFRICA/GIS meeting in Dakar, Senegal, 3-7 November, 2003.*

Badini O., 2003. Impact of Timed Rotational Grazing on Carbon Sequestration in Madiama Commune (North-Central Mali). Washington State University. Paper presented at the Beltsville, Maryland working meeting of the soil In Situ Working Meeting. February 10-13, 2003.

Badini O., 2002. Rainfall Risk and 'Response Farming': Using Rainfall Analysis, Simulation Modeling, GIS and Soil Fertility Management Technologies to Improve Agricultural Decisions in Mali. *SANREM CRSP Research Brief 2002 No.12.*

Badini O., 2001. Agroclimatic Assessment (Description and Analysis) of Madiama Commune in Mopti Region (West Africa). International Programs, Washington State University, Pullman, WA. SANREM WA. *Working Paper No. 02-01.* Office of International Research and Development (OIRD), Virginia Tech, Blacksburg, Virginia.

Badini O. and L. Dioni, 2001(a). Application of Rainfall Analysis, Biophysical Modeling and GIS to Agroclimatic Decision Support in Madiama Commune, Mali (West Africa). In *Proc. Research Synthesis Conference, SANREM CRSP, Athens, Georgia, November 28-30, 2001.*

Badini O. and L. Dioni, 2001(b). Morpho-Pedological Survey and Soil Mapping of Madiama Commune, Mali (West Africa). Etude Morpho-Pédologique et Cartographie de la Commune de Madiama, Cercle de Djenné, Mali. *Technical Report Washington State University; Working Paper No. 01-04,* Office of International Research and Development (OIRD), Virginia Tech, Blacksburg, Virginia.

- Rupp R., B. Frazier, O. Badini and L. Dioni. 2001. Landsat 7 Imagery for Community-based Soil Mapping in Madiama Commune, Mali. In *Proc. Soil Science Society of America, Charlotte, North Carolina*, Oct 21-25, 2001.
- Heatwole C., M. Bertelsen, K. Moore and O. Badini, 2001. Multi-temporal Classification of Land Cover using Landsat 7 Imagery in Madiama, Mali. In *Proc. Research Synthesis Conference, SANREM CRSP, Athens, Georgia*, November 28-30, 2001.
- Badini O., P. Wyeth, M.S. Touré, D Lassana and M. Bertelsen, 2001. Development of Methods and Tools for Evaluation and Decision Making. In *Innovative Research for Sustainable Agriculture and Natural Resources. SANREM CRSP 2000 Report*.
- Badini O., 2001. Biophysical Research Highlights and Preliminary Simulation Modeling Runs in Madiama Commune. In *Contribution to the Evaluation and Planning Meeting of SANREM West Africa – February 2001. Mopti, Mali (West Africa)*.
- Badini O, B. Traoré and O. Samaké., 2001. Combining Regional experience and Holistic Management to Search for Alternatives for Improving Soil Fertility in the Commune of Madiama. *Proc. Research Synthesis conference, SANREM CRSP, Athens, Georgia, November 28-30, 2001*.
- Badini, O., B. Traoré, and O. Samaké, 2001. Farmers' decision Making Aides for Improved Soil Fertility Management . In *Innovative Research for Sustainable Agriculture and Natural Resources. SANREM CRSP 2000 Annual Report*.
- Badini O. and P. Wyeth, 2000. Testing and Demonstrating Natural Resource and Conflict Management Technologies and Practices to Increase Food Security and Income Generation in Madiama Commune, Mopti Region, Mali. In *Choosing a Sustainable Future, SANREM CRSP 1999 Annual Report*.
- Mathison J.B., M. Bittelli, O. Badini, M. Flury, G.S. Campbell and E.J. Nichols. 1999. Reduction of Evapotranspiration by Foliar Application of Chitosan. In *Proc. Soil Science Society of America, Baltimore, MA*.
- Badini, O. 1998. Evaluation of Agricultural and Environmental Sustainability in Africa Using Computer-based Tools. Washington State University. International Programs/Development Cooperation. Consultant report. 30 pages.
- Badini, O. and G.S. Campbell. 1998. Evaluation of the Effect of Foliar Applications of Chitosan on Drought Resistance, Water Use and Dry Matter Production of Plants. Draft Report. Department of Crop and Soil Sciences, Washington State University.
- Badini, O., C.O. Stöckle and E.H. Franz. 1997. Application of Crop Simulation Modeling and GIS to Agroclimatic Assessment in Burkina Faso. *Agriculture, Ecosystems and Environment* (64) 233-244.
- Badini, O. 1997. Simulation Modeling of Light Interception, Water Balance and Crop Production in West African Parkland Type Agroforestry Systems. Ph.D. Thesis. Department of Crop and Soil Sciences, Washington State University.
- Lalba, A., O. Badini and P. Kleene. 1996. Setting Zonal Research and Development Priorities by Combining Informal and Formal Diagnostic Studies: Burkina Faso. pp. 77-90 in book: "Focusing Livestock Systems Research" A.C.W. Roeleveld and A. van den Broek (eds). 151pages. Royal Tropical Institute. The Netherlands.

Badini, O. 1994. Application of Modeling and GIS to the assessment of Agroclimatic Variability and Crop Production Risks in Burkina Faso. M.Sc. thesis. Program in Environmental Science and Regional Planning, Washington State University.

Badini, O. 1993. Proposition de Technologie en Milieu Réel: Cas du Conditionnement des Bovins de Trait en Saison Sèche au Campement de Dogoma (region oust du Burkina Faso). In *Proceedings of the Fourth Workshop of the West Africa Animal Traction Network held in Kano, Nigeria, 9-13 July 1990. Research for Development of Animal Traction in West Africa. P.R. Lawrence, K. Lawrence, J.T. Dijkman and P.H. Sttarkey (eds).*

Badini, O., et Sanou Patrice. 1990. Etude et Cartographie Agropastorale de 3 Terroirs Villageois de la Province du Mouhoun: Sao, Daman et Daboura. Rapport Final

Badini, O., 1989. Integration Agriculture-Elevage: Etude de l'évolution et des Contraintes de la Traction Animale dans le Terroir de Dogoma, Burkina Faso. Research Paper.

Badini, O., 1990. Préenquete Agropastorale et Etude des Parcours de la Province du Poni, Burkina Faso. Rapport Final.

Badini, O., 1985. Etude des Potentialités Fourragères et Possibilités d'Exploitation des Paturages de Gampela, Burkina Faso. Mémoire de fin d'études. Institut du development Rural, University de Ouagadougou, Burkina Faso.

LANGUAGE & PROFESSIONAL SOCIETIES:

English (excellent); French (excellent); Some Arabic

Societies: Ecological Society of America; Soil Science Society of America

GEOGRAPHIC EXPERIENCE:

Africa: Burkina Faso, Mali, Nigeria, Senegal, Cote d'Ivoire, and Morocco

United States: State of Washington

Middle East: Jordan, Afghanistan

Europe: France, Spain

AWARDS:

1991-1994. Thomas Jefferson Fellowships – Graduate Studies (Master of Science) and Participation to Seminars in the U.S.

1989. Award from C.I.H.E.A.M (Centre International des Hautes Etudes Mediteraneennes), Montpellier, France for participation at the International Intensive and Itinerant course on Agriculture, Pastoralism and Development at Rabat (MOROCCO), Saragoza (SPAIN), and Montpellier (FRANCE). October to December 1989.

1989. Award from ILCA (International Livestock Center in Africa) to participate at training on Techniques of Production for Small Ruminants. Niamey, Republic of Niger.

SKILLS:

- Word processing: Microsoft Word and WordPerfect
- Spreadsheet: Microsoft Excel and Quattro Pro
- Graphics: Microsoft PowerPoint and Harvard Graphics
- Data Base: Access
- Statistical Analysis in SAS, FASTAT, SPSS
- Working knowledge of Turbo Pascal, Basic and Visual basic Modeling Environments
- Programming, Installation and use of data loggers, soil sensors and weather stations.

- Development and management of Web pages in FrontPage, Macromedia Dream weaver & Fireworks.