
SOUTHERN JOURNAL OF AGRICULTURAL ECONOMICS



Volume 16, Number 2

December, 1984

Published by

Southern Agricultural Economics Association

SOUTHERN JOURNAL OF AGRICULTURAL ECONOMICS

Volume 16, Number 2
December, 1984

Copyright © 1984 by the Southern Agricultural Economics Association

1984 Editorial Council

- Neil R. Martin, Jr., *Auburn University*, Editor
John L. Adrian, Jr., *Auburn University*, Associate Editor
Oral Capps, Jr., *Virginia Polytechnic Institute and State University*
Kenneth C. Clayton, *NED, ERS, USDA*
Charles L. Cramer, *University of Missouri-Columbia*
Leon E. Danielson, *North Carolina State University*
Stanley M. Fletcher, *Georgia Experiment Station*
Edward O. Fryar, Jr., *University of Arkansas*
Ian W. Hardie, *University of Maryland*
John Holt, *University of Florida*
Stephen E. Miller, *Clemson University*
Mack C. Nelson, *Ft. Valley State College*
Michael R. Reed, *University of Kentucky*
Lynn L. Reinschmidt, *Mississippi State University*
Sujit K. Roy, *Texas Tech University*
John R. Stoll, *Texas A&M University*
Daniel S. Tilley, *Oklahoma State University*

Editorial Staff

- E.L. McGraw, Copy Editor
Wanda Toney, Secretary

Editorial Policy

The purpose of the *Journal* is to provide a forum for creative and scholarly work in agricultural economics and related areas. Contributions on methodology and applications in business, extension, research and teaching phases of agricultural economics are encouraged. Preference will be given to articles addressing problems and issues of concern in the southern region of the United States. Only submitted articles recommended by the Editorial Council are accepted for publication.

The Editorial Council encourages constructive criticism of *Journal* articles and will publish accepted comments and replies.

1984 Microcomputer Software Committee

- Preston LaFerney, *University of Arkansas*, Co-Chairman for Policy
Neil R. Martin, Jr., *Auburn University*, Co-Chairman for Review
Ernest Bentley, *Farm Computer Center, Inc., Christiansburg, Virginia*
Wallace Killcrease, *Mississippi State University*
Al Tinsley, *Clemson University*
Richard A. Levins, *University of Maryland*
James McGrann, *Texas A&M University*
Ted. R. Nelson, *Oklahoma State University*
Kenneth C. Schneeberger, *University of Missouri-Columbia*

1984 Executive Committee

- | | |
|-----------------------------|--|
| PRESIDENT | Joseph Havlicek, Jr., <i>Ohio State University</i> |
| PRESIDENT-ELECT | J. Richard Conner, <i>Texas A&M University</i> |
| PAST-PRESIDENT | Calvin R. Berry, <i>University of Arkansas</i> |
| FIRST VICE-PRESIDENT | John E. Ikerd, <i>University of Georgia</i> |
| SECOND VICE-PRESIDENT | Lanny Bateman, <i>Mississippi State University</i> |
| SECRETARY-TREASURER | C. L. Huang, <i>Georgia Experiment Station</i> |

Southern Journal of Agricultural Economics is published in July and December by the Southern Agricultural Economics Association.

Membership in the SAEA, consisting of persons and organizations having a professional interest in agricultural economics, includes subscription to the *Journal*. Regular membership dues are \$10. Junior membership dues are \$5.

The annual subscription rate for libraries and other institutions is \$15. Single copies of current issues are available to individuals at a price of \$5.

Please address all subscription, membership and change of address requests to C. L. Huang, Department of Agricultural Economics, Georgia Experiment Station, Experiment, Georgia 30212.

SOUTHERN JOURNAL OF AGRICULTURAL ECONOMICS

Volume 16, Number 2

December, 1984

Published by

Southern Agricultural Economics Association

COLLEAGUES WHO ASSISTED THE EDITORIAL COUNCIL DURING 1984

Allison, John R.	Epplin, Francis	Klindt, Thomas H.	Peterson, Willis
Alston, Julian M.	Ervin, David	Knowles, Glenn J.	Pope, C. Arden
Ames, Glenn C. W.	Ethridge, Don E.	Kramer, Randall A.	Purcell, Wayne
Amosson, Steve		Kuchler, Fred	
Anderson, Andy	Finley, Robert	Lacewell, Ronald D.	Randall, Alan
Anderson, Kim B.	Flick, Warren	Lawrence, Robert	Raunikar, Robert
Ball, Eldon	Foster, Phillips	Lazarus, William	Redfern, J. Martin
Baritelle, John	Foster, Tom	Leath, Mack N.	Reid, Donald
Barney, Frederick	French, Jim	Lee, Linda K.	Reneau, Duane R.
Batie, Sandra S.	Fuller, Marty	Levins, Richard	Reynolds, John
Baum, Kenneth	Garren, Nathan M.	Lin, William	Rhodes, V. James
Baumer, David L.	Geyer, Leon	Lin, Ying Nan	Robbins, Lynn
Beilock, Richard	Gilliland, Charles	Litzenberg, Kerry K.	Roninger, Vernon
Bentley, Ernest	Goodwin, H. L.	Love, Ross O.	Rosson, Parr
Berry, Calvin R.	Gyawu, Emmanuel	Luckham, W. R.	Rudel, Richard
Bessler, David A.	Haidacher, Richard	Luppold, William	Safley, Charles D.
Blaine, Tom	Hall, Harry	Luzar, E. Jane	Schatzler, Joe
Blanchiforti, Laura	Hanson, Greg	Lynne, Gary	Schaub, John
Bobst, Barry	Hardy, William E.	Makus, Larry D.	Seagraves, James A.
Bradford, Garnett	Hatch, Upton	Mapp, Harry P.	Seaver, Stanley
Braschler, Curtis	Hauser, Robert	Martin, J. Rod	Shafer, Carl E.
Breimyer, Harold F.	Havlicek, Joseph Jr.	Mathis, W. Kary	Shonkwiler, Scott
Broder, Josef M.	Hayenga, Wayne A.	McEowen, Jack	Shumway, C. Richard
Brown, William	Headley, J. C.	McGrann, James	Skees, Jerry
Bullock, J. Bruce	Hein, Norlan	McLemore, Dan L.	Spreen, Thomas
Capstick, Daniel F.	Herndon, Cary William	Meenen, Henry J.	Spurlock, Stan
Carlson, Gerald A.	Hopkin, John A.	Meyer, Lee	Standaert, James E.
Chambers, Robert	House, Robert	Milon, Walter	Stoecker, Arthur L.
Chattin, Barbara	Houston, Jack E.	Molnar, Joe	Strand, Ivar
Chavis, Jean Paul	Huang, Chung-Liang	Mulkey, David	Sumner, Daniel A.
Clonts, Howard	Hudson, Michael A.	Mundy, Darrell	Talpaz, Hovav
Clouser, Rodney	Hughes, Dean W.	Musser, Wesley N.	Taylor, Daniel B.
Cochran, Mark J.	Ishee, Sid	Myers, Les	Taylor, Timothy
Collins, Keith	Jeremias, Ron	Nelson, James R.	Thurman, Walter N.
Coutu, Arthur J.	Johnson, Paul R.	Nelson, Ken	Tinubu, Gloria
Crawford, Terry	Johnson, Stanley R.	Nichols, T. Everett Jr.	van Blokland, Jon
Crews, Jerry	Jones, Harold B.	Norton, George W.	Vitaliano, Peter W.
Crom, Richard	Jones, Hezekiah	Norton, Virgil	
Cuskaden, Charles M.	Jones, Lonnie	O'Brien, Patrick	Wailes, Eric J.
Davis, Bob	Jordan, Jeffrey L.	Ogg, Clay	Walker, Odell
Davis, Joe	Jordan, Johnny	Osburn, Donald D.	Wells, Gary
Deaton, Brady J.	Kaiser, Ed	Owens, T. Richard	West, Jerry G.
Debertin, David	Kay, Ronald D.	Paarlberg, Phil	Westcott, Paul
deSteiguer, J. Edward	Keller, Luther	Pagoulatos, Angelos	Wetzstein, Michael E.
Devino, Gary	Kenyon, David E.	Palmquist, Raymond B.	Williams, Joseph E.
Dillman, Buddy	Kilmer, Richard	Parks, Alfred L.	Williams, Louis
Eddleman, Bob	Kinnucan, Henry	Parsch, Lucas D.	Williams, Ron
Elam, Emmett W.	Kizer, Lenny	Pasour, E. C. Jr.	Wilson, Lowell
Emerson, Robert	Kliebenstein, James	Perrin, Richard K.	Wohlgenant, Mike
Epperson, James E.			Womack, Abner
			Woods, Mike

CONTENTS

Articles

Estimating Effects of Agricultural Research and Extension Expenditures on Productivity: A Translog Production Function Approach Syu-Jyun Larry Lyu, Fred C. White, and Yao-Chi Lu	1
Effects of Increasing Panama Canal Toll Rates on U.S. Grain Exports Stephen Fuller, Larry Makus, and William Gallimore	9
Financial Analysis of Solar Energy Applications with Endogenous System Sizing Lewell Gunter and Webb M. Smathers, Jr.	21
Economics of Purchasing Genetically Superior Beef Bulls G. M. Clary, J. W. Jordan, and C. E. Thompson	31
Management of Intensive Forage-Beef Production Under Yield Uncertainty C. Arden Pope, III, and C. Richard Shumway	37
Comparative Rents for Farmland and Timberland in a Subregion of the South Ian W. Hardie	45
Productivity Growth in the Florida Fresh Winter Vegetable Industry Timothy G. Taylor and Gary H. Wilkowske	55
State-Level Analysis of National Beef Policy: The Use of State Econometric Models Roland K. Roberts and William J. Martin	63
Irrigation Water Supply as a Bioeconomic Process Gary D. Lynne, William G. Boggess, and Kenneth M. Portier	73
Forecasting Rail Freight Traffic from a Statewide Economic Model Jeffrey L. Jordan and Stanley R. Thompson	83
Value of Irrigation Water in the Middle Atlantic States: An Econometric Approach Bruce Madariaga and Kenneth E. McConnell	93
The Impact of Alternative Payment Arrangements on the Performance of Florida Sugarcane Cooperatives Rigoberto A. Lopez and Thomas H. Spreen	99
Dynamic Stochastic Simulation of Daily Cash and Futures Cotton Prices DeeVon Bailey, B. Wade Brorsen, and James W. Richardson	109
A Discriminant Analysis of Grain Market Structure in Selected States of the South and Cornbelt E. Dean Baldwin, Cameron S. Thraen, and Donald W. Larson	117
Producer Gas Fueled Irrigation: Evaluating the Potential of a Technology Clyde Kiker and Eric Bauman	127
Demand Interrelationships Among Fruit Beverages Jong-Ying Lee	135

IO/EAM: An Input-Output Economic Assessment Model Jeffrey L. Jordan and Rusty Brooks	145
--	------------

Notes

Economic Thresholds Under Uncertainty with Application to Corn Nematode Management L. Joe Moffitt, Darwin C. Hall, and Craig D. Osteen	151
Risk-Return Assessment of Irrigation Decisions in Humid Regions: An Extension Bernard V. Tew and William G. Boggess	159