

Approved April 26, 1991
Date

MINUTES OF THE Senate COMMITTEE ON Economic Development

The meeting was called to order by Senator Dave Kerr at
Chairperson

2:30 ~~am~~^{XX}/p.m. on April 24, 19⁹¹ in room 123-S of the Capitol.

All members were present except:

Senator Paul Feleciano, Senator Ken Francisco, Senator Janice McClure
and Senator Wint Winter

Committee staff present:

Bill Edds, Revisor of Statutes' Office
Lynne Holt, Legislative Research Department
LaVonne Mumert, Committee Secretary

Conferees appearing before the committee:

Gary Hall, Acting Secretary, Board of Agriculture
Dr. Bill Brundage, President, Kansas Technology Enterprise Corporation
Laura Nicholl, Secretary, Department of Commerce

Senator Dave Kerr, Chairman, called the meeting to order and introduced Gary Hall.

SB 452 - Adding secretary of state board of agriculture to the board of directors of the Kansas technology enterprise corporation

Mr. Hall provided written testimony in support of the bill (Attachment 1). He believes the state of Kansas has a very good chance of receiving federal dollars in the areas of alternatives uses of agricultural products in non-food uses and non-feed uses. He made reference to the 1990 U. S. farm bill and provisions for funding of these projects. Mr. Hall explained that the not-for-profit organization, New Uses Council, Inc., was established for the purpose of lobbying for this type of funding. He said that while the Board of Agriculture would be pleased to be the recipient of these funds, they do not have the proper framework in place to do the program justice, and the board feels the proper entity is the Kansas Technology Enterprise Corporation (KTEC). Mr. Hall noted that the primary purpose of adding the secretary of the state board to the KTEC board is to make KTEC more attractive to the U. S. Department of Agriculture. He said that there is no additional funding or FTE's involved. Answering a question from Senator Oleen, Mr. Hall said that all members of KTEC are voting members.

Bill Brundage said KTEC supports the bill and has been involved in the effort to get the language included in the farm bill to provide this funding.

Laura Nicholl also spoke in favor of the bill.

During discussion, Senator Salisbury requested that the make-up of KTEC be a topic of study in the future.

The meeting was adjourned at 3:00 p.m. The next meeting of the Committee will be on adjournment of the Senate, April 24, 1991.

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Attachment 1
4/24/91
Sen. Eco. Devel.

COMMERCIALIZING INDUSTRIAL USES FOR AGRICULTURAL COMMODITIES

A conference for the states of Iowa, Kansas, Missouri, and Nebraska.

March 28-29, 1989

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COMMERCIALIZING INDUSTRIAL USES FOR AGRICULTURAL COMMODITIES

INTRODUCTION TO THE CONFERENCE

Iowa Secretary of Agriculture Dale M. Cochran, Kansas Secretary of Agriculture Sam Brownback, Missouri Director of Agriculture Charles E. Kruse, and Nebraska Director of Agriculture Dr. Roy Fredrick welcome you to this two-day conference on the commercialization of industrial uses for agricultural commodities. The focus of the conference is on the possibilities these new uses of existing agricultural products bring to the economies of the Midwestern states. The conference brings together a number of experts on non-food uses of agricultural commodities.

Many people believe the agricultural industry in the four states must expand its opportunities to sell non-food products in addition to food items. Agriculture must become a business of energy and materials as well as one of food and fiber. Midwestern agriculture then can visualize and actively seek new and expanded markets for agricultural products.

CONFERENCE OBJECTIVES

Increase knowledge and interest about opportunities that exist for non-food uses in industrial applications of agricultural commodities involving agriculture and industry. Also, informing the investment community, economic development leaders, legislative leaders, the media and the general public.

Demonstrate specific examples of non-food uses in industrial applications of agricultural commodities in the mid-west.

Suggest methods for commercializing non-food uses in industrial applications of agricultural commodities and bringing them into common use.

The U. S. Small Business Administration's participation in this cosponsorship does not constitute an express or implied endorsement of the cosponsors' or participants' opinions, products or service.

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COMMERCIALIZING INDUSTRIAL USES FOR AGRICULTURAL COMMODITIES

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CONFERENCE PROGRAM

Tuesday, March 28, 1989

**12 noon –
1:30 p.m.**

Registration – Refreshments available in the Exhibit Room

1:30 p.m.

Welcome
Sam Brownback, Kansas Secretary of Agriculture
Topeka, Kansas
Presiding

Clean Air and New Products Via Agriculture
Martin L. Andreas
Senior Vice-President & Assistant to the Chief Executive, Archer Daniels Midland
Company, Decatur, Illinois

2:30 p.m.

Public/Private Interface
Dr. Paul O'Connell
Deputy Administrator, USDA Cooperative States Research Service, Washington, D.C.

3:00 p.m.

Concurrent Sessions

1. Starches

Rollie McCubbin, Chief, Commodity Bureau
Iowa Department of Agriculture and Land Stewardship
Des Moines, Iowa
Presiding

Industrial Uses for Wheat Starch
Ladd Seaberg
President, Midwest Grain Products, Inc., Atchison, Kansas

Industrial Uses for Corn Starch
Dr. Gene Iannotti
Associate Professor, Department of Agricultural Engineering
University of Missouri-Columbia, Columbia, Missouri

2. Oils

S. Wayne Yokley, Director, Market Development Division
Missouri Department of Agriculture, Jefferson City, Missouri
Presiding

Use of Soybean Oil and the Production of Printing Ink
Wilson Cunningham
Research Manager, The Newspaper Center, Reston, Virginia

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Vegetable Oil Use with Agri-Chemical Crop Protectants
Dr. George Kapusta, Professor, Weed Control and Crop Protection
Plant and Soil Science Department, Southern Illinois University, Carbondale, Illinois

Commercial Application of Soybean Products
Jerry C. Weigel
Director of Nutrition, Archer Daniels Midland Feed Corporation, Decatur, Illinois

4:00 p.m. Break between Concurrent Sessions – Refreshments in Exhibit Room

4:15 p.m. Concurrent Sessions
Repeat of same Concurrent Sessions offered at 3:00 p.m.

5:15 p.m. Adjourn until Social Reception at 6:00 p.m.

6:00 p.m. Reception

7:00 p.m. Banquet

Dr. A.L. (Roy) Fredrick
Director, Nebraska Department of Agriculture, Lincoln, Nebraska
Presiding

Legislative Outlook for Agricultural Industrial
Commercialization
The Honorable Virginia Smith
United States Congresswoman from Nebraska

Wednesday, March 29, 1989

7:45 a.m. Breakfast

Charles E. Kruse
Director, Missouri Department of Agriculture
Jefferson City, Missouri
Presiding

Food for Thought: A Policy Prospect for the 1990's
The Honorable Bob Dole
United States Senator from Kansas

9:30 a.m. Concurrent Sessions

1. New Crops

Dr. Ray Burns, Agricultural Marketing Specialist
Marketing Division, Kansas State Board of Agriculture,
Topeka, Kansas
Presiding

Production and Marketing of Specialty Crops
Steven D. Chambers
Vice-President & General Manager
Montana Vegetable Oil and Feed Company
Division of Evans Grain and Elevator Company
Great Falls, Montana

Commercializing Industrial Rapeseed Production
Frank Flider
General Manager, Calgene Chemical, Inc.
Des Plaines, Illinois

2. How to Commercialize Industrial Uses of Agricultural Commodities

Dr. Melvin G. Blase
Professor, Agricultural Engineering and
Coordinator, High Erucic Acid Oil Project
University of Missouri-Columbia, Columbia, Missouri
Presiding

Commercialization of Natural Fibers
Robert Raun
Natural Fibers, Ogallala, Nebraska

The Process of Decisionmaking Concerning New Products
Rich Schafermeyer
Product Development, Procter and Gamble, Cincinnati, Ohio

3. Livestock Co-Products

Stan Garbacz, Director, Agriculture Promotion and Development
Nebraska Department of Agriculture, Lincoln, Nebraska
Presiding

The Importance of The Use of Livestock Co-Products Now
Dr. Terry Klopfenstein
Professor, Animal Science, University of Nebraska
Lincoln, Nebraska

New Opportunities From The Packing House
A. Severin Johnson, Trade Liaison
Meat Export Research Center, Iowa State University, Ames, Iowa

Waste Not! Want Not!
Richard Waybright
Owner-Manager, Mason-Dixon Dairy Farm, Inc.
Gettysburg, Pennsylvania

10:30 a.m.

Break between concurrent sessions - Refreshments in Exhibit Room

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10:45 a.m. **Concurrent Sessions**

Concurrent Sessions repeated

1. **New Crops – repeat of 9:30 session**
2. **How to Commercialize Industrial Uses of Ag Commodities – repeat of 9:30 session**
3. **They Said It Couldn't Be Done**

**Stan Garbacz, Director, Agriculture Promotion and Development
Nebraska Department of Agriculture, Lincoln, Nebraska
Presiding**

**Technical Support for Commercialization
Dr. L. Davis Clements
Chair, Department of Chemical Engineering
University of Nebraska, Lincoln, Nebraska**

**Potential Financing of Innovative Ag Products
Sam D. Campbell
Owner-Partner, Campbell-Becker, Inc., Lawrence, Kansas**

**Initiating and Managing Change
Lee Reeve
President, AgriEnergy, Garden City, Kansas**

12 noon **Lunch**

**Dale M. Cochran, Iowa Secretary of Agriculture,
Des Moines, Iowa
Presiding**

**New Directions for New Uses of Farm Products:
Making the Private Sector-Federal Partnership Work
The Honorable Dan Glickman
United States Congressman from Kansas**

**Developing Your Strategy with Industrial Uses of Agricultural Commodities
Loren Kruse
Editor, Successful Farming Magazine, Des Moines, Iowa**

BIOSKETCHES

Keynote Speakers

MARTIN L. ANDREAS

Martin L. Andreas is Senior Vice-President & Executive Assistant to the Chief Executive of Archer Daniels Midland Company, Decatur, Illinois. Andreas holds a degree in business from Miami University. Following his graduation in 1959 he became President of the Andreas Corporation, a privately-held company that managed the family stock investments and business ventures. In 1970, he returned from Florida to Iowa, where he was born, to serve as Executive Vice-President of Corn Sweeteners in Cedar Rapids. The company is now a division of Archer Daniels Midland. In 1975, Andreas became President of ADM Corn Sweeteners. In 1983, he became a Corporate Vice-President & was appointed to the ADM Board of Directors in April 1986. Andreas assumed his current position with the corporation in December 1988. Andreas is Chairman of the Board for the Corn Refiners Association.

CONGRESSWOMAN VIRGINIA SMITH

Virginia Smith of Chappell, Nebraska, is serving her 15th year in the United States House of Representatives as the Member of Congress from the Third District of Nebraska. Congresswoman Smith is the senior ranking Republican woman in the 101st Congress and serves on the House Appropriations Committee. She serves on the Appropriations Subcommittees on Agriculture and Energy and Water Development. In the current Congress, Mrs. Smith chairs the House Republican Research Committee Rural and Agricultural Communities Task Force. Her key legislative initiatives in the 100th and 101st Congresses have included the establishment of a national institute to develop new industrial uses for agricultural commodities. Born in Randolph, Iowa, Congresswoman Smith attended Iowa public schools and received her bachelor of arts degree in education from the University of Nebraska.

SENATOR BOB DOLE

Bob Dole of Russell, Kansas, was first elected to the United States Senate in 1968. Prior to that he served four consecutive terms in the United States House of Representatives. Senator Dole is Kansas Senior Senator and serves on the Senate Finance, Agriculture, and Rules Committees. Respected as a master legislator, Bob Dole was unanimously reelected by his Republican colleagues to a third term as their Senate leader on November 28, 1988. A tough, common sense conservative from America's heartland, Senator Dole has been a leader for budget responsibility, tax reform, a sound Social Security system, quality and affordable health care, rights for the disadvantaged and persons with disabilities, and for a better future for rural America. Bob Dole was born in Russell. During World War II, he left premedical studies at the University of Kansas to enlist in the Army. He was gravely wounded in 1945 and spent thirty-nine months in hospitals fighting for his life. After the war he continued his education at the University of Arizona at Tucson and at Washburn Municipal University in Topeka where he earned his bachelor's and law degrees.

CONGRESSMAN DAN GLICKMAN

Dan Glickman, a Wichita, Kansas native, was elected to the United States House of Representatives in 1976. Congressman Glickman currently serves on the House Agriculture; Science, Space and Technology; and Judiciary Committees. He is Chairman of the Agriculture Subcommittee on Wheat, Soybeans, and Feed Grains. He is a member of the House Permanent Select Committee on Intelligence. Congressman Glickman was named the House Assistant Majority Whip in 1985 and elected regional representative to the Democratic Steering and Policy Committee in 1987. Congressman Glickman holds a bachelor of arts degree in history from the University of Michigan and a law degree from George Washington University. Prior to his election to Congress he served as a trial attorney for the U.S. Securities and Exchange Commission 1969-70; was an attorney with Sargent and Klenda Law Firm of Wichita 1971-73, and in 1973 became a partner in the same firm; and was a member of the Wichita School Board 1973-76, serving as Board President 1975-76.

GUEST SPEAKERS AND CONCURRENT SESSION SPEAKERS

DR. PAUL F. O'CONNELL

Dr. Paul F. O'Connell serves as Deputy Administrator of the Cooperative States Research Service of the United States Department of Agriculture. He provides leadership for a recently established national program to find alternative opportunities for United States farmers. Major program areas are aquaculture, industrial crops, small-scale farming, and low-input agriculture. Previously, O'Connell served for three years as Special Assistant to Orville G. Bentley, Assistant Secretary for Science and Education. Earlier professional experience involved 14 years with the Forest Service; two years with the Economic Research Service; and three years in the private sector. O'Connell earned his bachelor of science degree from the University of Minnesota, majoring in biochemistry and dairy science. He holds a master's degree in agriculture economics from Colorado State University and a master's degree in business from the Wharton School, University of Pennsylvania. His doctorate degree in forestry was earned at the University of Wisconsin.

LADD M. SEABERG

Ladd M. Seaberg is President of Midwest Grain Products, Inc., Atchison, Kansas, and Midwest Grain Products of Illinois, Pekin, Illinois. Midwest Grain's sales include wheat protein, wheat starch, beverage spirits, industrial alcohol, fuel alcohol, and carbon dioxide. Seaberg began working at Midwest Grain in 1969 as Distillery Production Manager; in 1970 was named Vice President and Manager of the Starch Division; in 1972 became Vice President and Plant Manufacturing Manager; in 1979 became Vice President and General Manager, and now serves as President of the two companies. In addition to the Board of Directors of Midwest Grain, Seaberg serves on the Board of Directors of the Exchange National Bank, McCormick Distilling Company, and Kansas, Inc. Seaberg served as an appointed member of the Kansas State Board of Agriculture's Non-Food Use Task Force.

DR. GENE IANNOTTI

Dr. Gene Iannotti is an Associate Professor in the Department of Agricultural Engineering at the University of Missouri-Columbia. He received a doctorate degree in microbiology from the University of Maryland in 1970; his research in the Department of Dairy Science characterized lipids of rumen bacteria. Iannotti has been involved in post-doctoral studies of microbial interactions in anaerobic ecosystems at the University of Illinois and has evaluated pollution from human and agricultural waste in New York State. Iannotti heads the New Products Group at the University of Missouri. This is a cooperative research program for development of industrial products from agricultural materials. Research has focused on plastic composites, fermentation products, utilization of by-products, and economic evaluation.

H. WILSON CUNNINGHAM

H. Wilson Cunningham is Research Manager/Chemistry for the American Newspaper Publishers Association. He joined ANPA in 1983 as an analytical chemist and became Research Manager/Chemistry in 1988. The chemistry group activities include the ink development, printing research, newsprint testing, environmental chemical analysis, color ink standardization and ink testing. He holds a bachelor of science degree from North Carolina State University and a master of science degree from Michigan State University. He formerly worked for the State of Wisconsin Water Chemistry Department and a private consulting laboratory as an analytical chemist.

DR. GEORGE KAPUSTA

Dr. George Kapusta is Professor of Agronomy, specializing in weed control and crop production, and is Superintendent of the Plant and Soil Science Research Stations at Southern Illinois University. Dr. Kapusta also holds an appointment as Professor of Agronomy at the University of Illinois. He received his bachelor of science degree from North Dakota State University, a master of science degree from the University of Minnesota, and a doctorate degree from Southern Illinois University. He has 30 years experience in crop production and weed control in North Dakota and Illinois. Dr. Kapusta's expertise is in weed control with specialties in spray technology and the use of soybean oil as spray carriers and additives. He has lectured on the use of vegetable oils for agricultural purposes in the United States, Canada, England, France, Belgium, and the Netherlands.

JERRY C. WEIGEL

Jerry C. Weigel is Vice President of Nutrition and Regulatory affairs for Archer Daniels Midland Feed Corporation located in Decatur, Illinois. Weigel was raised in Eastern Nebraska where he was involved in a beef cattle feeding operation. He was educated in the areas of animal science and animal nutrition at the University of Nebraska and the University of Florida. Weigel has been involved in the formula feed industry since 1973. His involvement has been in the areas of feed formulation, research, technical service, and quality control. His current position with ADM involves all nutrition and regulatory duties.

STEVEN D. CHAMBERS

Steven D. Chambers has been Manager of Montana Vegetable Oil, a Division of Evans Grain and Elevator Company, since 1983. In 1982 and 1983, Chambers was a grain merchandiser in Portland, Oregon and in 1981 and 1982 was a grain merchandiser with Evans Grain and Elevator Company at their headquarters in Ogden, Utah. Chambers holds a bachelor of arts in economics from Claremont Men's College, Claremont, California. Chambers is experienced in working with several oilseed crops including: rapeseed, canola, flaxseed, mustardseed and safflower.

FRANK J. FLIDER

Frank J. Flider has been General Manager, Calgene Chemical, Inc. (formerly Agro Ingredients, Inc.) Des Plaines, Illinois a subsidiary of Calgene, Inc., Davis California, since 1987. Prior to that time, he was Executive Director of Jojoba Marketing Cooperative from 1985 to 1987; Product Manager and General Manager, Lecithin Division, Riceland Foods, Inc. from 1981 to 1985; Research Chemist with Central Soya, Inc.; and A.E. Staley Manufacturing Company from 1974 through 1981. Flider holds a bachelor of science in chemistry from Elmhurst College.

ROBERT RAUN

Robert Raun has been a Kearney County, Nebraska farmer for 38 years and for the last several years has been growing milkweed for commercial usage. He is associated with National Fibers, Inc., a milkweed production company at Ogallala, Nebraska. From January 1983 to March 1985 Raun served as Director of the Nebraska Department of Agriculture under Nebraska's Governor Kerrey. Raun is a Nebraska native and graduated from the University of Nebraska-Lincoln, College of Agriculture. He served 15 years on the University of Nebraska Board of Regents. He presently serves on the Nebraska Futures Board and the Board of Directors of the Kellogg Foundation.

RICHARD G. SCHAFFERMEYER

Richard G. Schafermeyer has been Section Head of the Industrial Chemicals Division, The Procter and Gamble Company, Cincinnati, Ohio since 1980. Schafermeyer holds bachelor and master of science degrees in chemical engineering from the University of Missouri at Rolla. He has been with the Industrial Chemicals Division since 1980. From 1975 to 1980 he was with Procter and Gamble's Foods and Beverage Technology Division. During college he worked summers for DuPont, Procter and Gamble, and A.E. Staley.

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DR. TERRY J. KLOPFENSTEIN

Dr. Terry J. Klopfenstein currently teaches undergraduate courses in feedlot nutrition and management as well as some graduate courses in the Department of Animal Science at the University of Nebraska–Lincoln. An Ohio native, Klopfenstein holds bachelor and master of science and doctorate degrees from Ohio State University. He has been involved in research on the improvement of feeding value of crop residues, protein utilization, and systems of beef production.

A. SEVERIN JOHNSON

A. Severin Johnson has been the Trade Liaison for the Meat Export Research Center, Iowa State University, Ames, Iowa. In that capacity he forms the link between this multidisciplinary group that is working on issues relating to meat exports and industry, government, commodity groups, and trade associations. He formerly was associated with the U.S. Meat Export Federation and Townsend Engineering. Johnson has travelled extensively in Europe, the USSR, South America, and the Far East and speaks several languages.

RICHARD WAYBRIGHT

Richard Waybright's unique geographical location, directly on the Mason–Dixon Line, has provided the name for his crop and dairy operation. Waybright, of Gettysburg, Pennsylvania, incorporated Mason–Dixon Dairy Farm, Inc., in 1967. The operation currently includes 2100 acres for forage production, 1275 milk cows, and 1100 replacement heifers. Waybright started farming with his brother in 1945 and they began the dairy processing plant in 1962. Mason–Dixon Farms is known for its energy self-sufficiency. Using a biogas digester the farm produces electricity to meet all its own electrical needs as well as excess power sold to the local power company. Waybright has been an agricultural advisor to the countries of China, Chile, and Liberia. He served as one of twelve agricultural advisors to President George Bush during the 1988 election.

DR. L. DAVIS CLEMENTS

Dr. L. Davis Clements is Chair of the University of Nebraska–Lincoln, Department of Chemical Engineering. Dr. Clements is also the Interim Director of the University's Non–Food Use Center. His specialty areas are process design and development, use of agricultural products as industrial raw materials and the use of alternative technologies in economic development. Dr. Clements holds three degrees in chemical engineering, a bachelor of science from Oklahoma State University, a master of science from University of Illinois, and a doctorate from the University of Oklahoma.

SAM D. CAMPBELL

Sam D. Campbell, Lawrence, Kansas, has spent the last 15 years in the financing and venture capital business. He is the co-founder and General Partner of Research Capital Management Group and Research Capital Management Group II. Both are seed capital and early stage venture capital companies. Recently, Campbell joined with the Kansas Technology Enterprise Corporation and formed a new fund, the Ad Astra Fund, that will invest public and private monies in technology based companies. Campbell received his bachelor's degree and his master's in business administration from the University of Kansas.

LEE REEVE

Lee Reeve is a sixth generation Kansas cattleman from Garden City, Kansas. He is Group Manager for Reeve Cattle Company, a 10,000–head private cattle feedlot started in 1962; Reeve AgriEnergy, a two–million–gallon–per–year ethanol plant started in 1981; 4,500 acres of irrigated farmland; and a fish operation started in the last several years which markets between one–half and one million pounds of fish annually. Reeve holds a degree in agricultural economics from Kansas State University. Reeve served as an appointed member of the Kansas State Board of Agriculture's Non–Food Use Task Force and is serving as an appointed member of the Kansas Agricultural Value Added Processing Center Leadership Council. He was a 1988 recipient of the Kansas State Board of Agriculture "Innovator of the Year Award."

LOREN KRUSE

Loren Kruse is the editor of Successful Farming magazine. He joined the magazine's editorial staff in 1976 as Senior Farm Management Editor, was promoted to Managing Editor in 1982 and to his present position in January, 1989. In 1982 and 1980, the American Agricultural Editors' Association honored Kruse twice for best article on marketing. He also won a 1977 Oscar in Agriculture Award for an article on land buying. Kruse pioneered Successful Farming's "MarketCall," a free management and marketing hotline service for farmers nationwide. He also co-authored two Successful Farming books: Charting for Profit and Hedging for Profit. Before joining the magazine, Kruse was the Science Editor at Oklahoma State University, Stillwater. He holds two bachelor of science degrees in technical journalism and agricultural economics from Kansas State University, Manhattan and a master of science degree in rural adult education from Oklahoma State University.

STATE DIRECTORS AND SECRETARIES OF AGRICULTURE

DALE M. COCHRAN, IOWA SECRETARY OF AGRICULTURE

Dale M. Cochran was elected Iowa Secretary of Agriculture in November of 1986 and took office January 2, 1987. This position as leader and spokesman for the Iowa agricultural community is the culmination of a long career that has encompassed farming, extension work, and public service. First and foremost, Secretary Cochran is a farmer. He has farmed near Eagle Grove, Iowa for 33 years, on the farm where he grew up. He has experience as a county extension agent and as farm editor of the Fort Dodge Messenger. Secretary Cochran served 22 years in the Iowa Legislature, including four years as Speaker of the House, and four as Minority Floor Leader.

SAM BROWNBACK, KANSAS SECRETARY OF AGRICULTURE

Sam Brownback is the tenth Kansan to hold the office of Secretary of Agriculture since the Kansas State Board of Agriculture's inception in 1873 as the first state department of agriculture in the country. Secretary Brownback was reared on a Linn County farm near Parker, Kansas, where his family still farms. He holds a bachelor's degree in agricultural economics from Kansas State University and a law degree from the University of Kansas. He was an active Future Farmers of America member, serving as Kansas president and as national vice president in 1977. In 1978 he was elected president of the Kansas State University Student Body. He served as Farm Director for KSAC Radio in 1979-80. Before his appointment as Kansas Secretary of Agriculture, he was a partner in a Manhattan, Kansas law firm. He also served as Instructor and Extension Specialist in Agricultural Law for Kansas State University.

CHARLES E. KRUSE, DIRECTOR, MISSOURI DEPARTMENT OF AGRICULTURE

Charles E. Kruse is Director of the Missouri Department of Agriculture. As director, he administers extensive programs benefitting all sectors of agriculture and agribusiness in Missouri and the state's agricultural processing industry. Kruse is closely associated with production agriculture and active in the soybean, corn, and cotton associations in Missouri. He holds a bachelor of science degree from Arkansas State University-Jonesboro and a master of science degree from the University of Missouri-Columbia.

DR. A. L. (ROY) FREDRICK, DIRECTOR, NEBRASKA DEPARTMENT OF AGRICULTURE

Dr. Roy Fredrick became Director of the Nebraska Department of Agriculture on April 1, 1987. In that role, he has responsibility for numerous regulatory agencies relating to Nebraska's agricultural and food industries and serves as advocate for Nebraska agriculture. Immediately prior to joining the Nebraska Department of Agriculture, Frederick was an Agricultural Economist at the University of Nebraska, where his area of specialty was public policy. He previously held an appointment at Kansas State University and a staff appointment to the U.S. Senate Committee on Agriculture and Forestry. Frederick was reared on a grain and livestock farm near Kearney, Nebraska. He holds bachelor's and master's degrees in agricultural economics from the University of Nebraska and a doctorate in agricultural economics from Purdue University.

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CONFERENCE PLANNING COMMITTEE

ROLAND "ROLLIE" MCCUBBIN, IOWA DEPARTMENT OF AGRICULTURE

Rollie McCubbin has been on the staff of the Iowa Department of Agriculture in various capacities since 1977. He was appointed Assistant Director of the Marketing Division in 1982 and was responsible for export promotions and activities. Currently McCubbin is Chief of the Livestock and Grain Bureau at the department. McCubbin holds a bachelor's degree in dairy science from Iowa State University. He is an Iowa native and has been actively involved in a family farming operation since 1982.

DR. RAYMOND L. BURNS, KANSAS STATE BOARD OF AGRICULTURE

Ray Burns has served as chair of the planning committee for this conference. He has been associated with the Development Section of the Marketing Division of the Kansas State Board of Agriculture since 1986. Since joining the staff of the Kansas State Board of Agriculture he has principally been involved with value-added processing, industrial utilization of agricultural commodities, new crops, and poultry production. Burns served as the staff coordinator for the Kansas Non-Food Use Task Force and was the principal in the development of the Task Force Report. He chairs the USDA, Cooperative State Research Service, Marketing/Economics Committee, High Erucic Acid Oils (Crambe/Rapeseed) Project. A Kansas native, Burns holds a masters degree in biochemistry/nutrition and a doctorate degree in statistics/genetics from Purdue University.

LOREEN LOCKE MCMILLAN, KANSAS STATE BOARD OF AGRICULTURE

Loreen Locke McMillan is Information Management Specialist in the Development Section of the Marketing Division of the Kansas State Board of Agriculture. She joined the Marketing Division in 1970 and has been Coordinator of Market Development and Promotion and Assistant Director of the Division. McMillan is a certified home economist, certified by the American Home Economics Association, and holds bachelor of science degrees in Home Economics Journalism and Home Economics Education from Kansas State University. She served as state president of the Kansas Home Economics Association in 1984-85.

S. WAYNE YOKLEY, MISSOURI DEPARTMENT OF AGRICULTURE

Wayne Yokley began his career with the Missouri Department of Agriculture in 1970. He has been Director of the Market Development Division since 1985. As Director he administers the Missouri's domestic and international marketing programs, grape and wine program, and the state's Agriculture Development Fund Program. Yokley holds a bachelor of science degree in animal husbandry from the University of Missouri-Columbia.

GEORGE BEATTIE, NEBRASKA DEPARTMENT OF AGRICULTURE

George Beattie has been Assistant Director of the Nebraska Department of Agriculture since May 1987. His primary responsibilities include agricultural promotion and development. His prior experience has been as Assistant Vice President and Agricultural Loan Officer for the Platte Valley State Bank of Kearney for two and one-half years; co-owner of his family's diversified crop and livestock farm near Sumner, Nebraska; and he taught english and history at Arlington High School at Arlington, Nebraska. Beattie holds a bachelor of arts degree in english and history from Kearney State College.

STANLEY J. GARBACZ, NEBRASKA DEPARTMENT OF AGRICULTURE

Stanley J. Garbacz has been Director of Agriculture Promotions and Development Division of the Nebraska Department of Agriculture since 1987. Garbacz joined the department staff in 1979 as an auditor. Within a year he became director of the Budget and Finance Division. He also headed the personnel section and the Ag Development Division for the Department. Garbacz holds a bachelor of science degree in business administration from the University of Nebraska-Lincoln.

DR. MELVIN G. BLASE, COORDINATOR HIGH ERUCIC ACID OIL PROJECT

Dr. Melvin G. Blase has been Professor of Agricultural Economics at the University of Missouri-Columbia since 1973. He was Director of the Center for International Programs and Studies 1977-79; Associate Director, International Programs and Studies 1972-74; Visiting Professor at Michigan State University during a sabbatical 1971-72; and Associate Professor at the University of Missouri 1965-73. In 1987, Dr. Blase was the founding coordinator of the High Erucic Acid Oil Project involving eight state universities which is headquartered at the University of Missouri-Columbia. Dr. Blase holds bachelor's and master's degrees from the University of Missouri and a doctorate degree from Iowa State University.

DR. DANIEL E. KUGLER, UNITED STATES DEPARTMENT OF AGRICULTURE

Dr. Daniel E. Kugler has been working for the United States Department of Agriculture, Cooperative States Research Service since 1986 and currently serves as Assistant Deputy Administrator for Special Projects and Program Systems. Dr. Kugler provides leadership for several major program areas including commercialization of agricultural industrial materials. From 1976 through 1985 Dr. Kugler worked for the USDA Economic Research Service, conducting economics and policy studies for soil and water conservation. Dr. Kugler holds a bachelor of science degree in physics, a master of science in resource development, and a doctorate in agricultural economics all from Michigan State University. Dr. Kugler served with the Peace Corp in Afghanistan from 1971 through 1973.

JUDITH A. KRUEGER, SMALL BUSINESS ADMINISTRATION

Judy Krueger has been the Regional Advocate for the Small Business Administration, Region VII, serving the small business communities in Iowa, Kansas, Missouri, and Nebraska, since 1986. The Office of Advocacy was created in 1976 to serve as an independent voice for small business within the Federal Government. Advocacy focuses on issues and government policies as they impact small business; and also, studies the role of small business as it relates to competition, productivity, innovation, and entrepreneurship. Prior to her appointment as Regional Advocate, Krueger served as Intergovernmental Liaison for the state of Kansas, providing linkage as the Single Point of Contact among all levels of government to coordinate local, state, and federally-funded projects and programs.

GERHARD METZ, KANSAS CHAMBER OF COMMERCE AND INDUSTRY

Gerhard Metz is Director of Taxation for the Kansas Chamber of Commerce and Industry. In addition to his responsibilities in the tax field, Metz follows legal affairs and tracks agricultural issues for the Kansas Chamber. He holds a bachelor of arts from the University of Northern Colorado-Greeley, a law degree from Washburn University School of Law, and is a candidate for the master of arts degree from the University of Missouri-Kansas City.

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COMMERCIALIZING INDUSTRIAL USES FOR AGRICULTURAL COMMODITIES**CONFERENCE SPEAKERS**

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COMMERCIALIZING INDUSTRIAL USES OF AGRICULTURAL COMMODITIES
SPEAKER'S EXECUTIVE SUMMARIES

CLEAN AIR AND NEW PRODUCTS VIA AGRICULTURE

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PUBLIC/PRIVATE INTERFACE

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Many research programs are funded by universities and the federal government because payoff is too longterm and uncertain for the private sector. Commercialization of promising technologies has similar incentive problems, but is not quite as elusive. Therefore, a partnership is the answer. The private sector has a key role in the process because people experienced in buying and selling goods are best able to identify the market. The private sector should also provide a product champion, that is, a firm or individual that believes in the ultimate commercial success of a particular product. A project should be based on solid analysis, but the ultimate success of any given venture most often depends on someone who strongly believes in the final outcome.

The government/academic side of the partnership can provide: 1) researchers and technology transfer specialists who can provide the longer term view; 2) network of contracts in state and federal government who can reduce regulatory red tape; 3) necessary seed money; and 4) incentives for production, processing, and marketing sectors to work together.

INDUSTRIAL USES FOR WHEAT STARCH

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The U.S. market for starch products has mainly been in the form of cornstarch. Corn as a raw material for the starch production process is grown across the U.S. in large quantities and at very high yields per acre. This gives corn a cost advantage in comparison to wheat which is grown in more arid areas at much lower yields. As an example, today's price for milo is \$4.45 per hundred weight in comparison to wheat which is \$7.40 per hundred weight.

In other parts of the world such as Australia, the economy is much different. Corn is not available for climatic reasons so we don't see the economic comparison to cornstarch. In Australia, almost all of the industrial and food requirements for starch are satisfied by wheat starch. In Europe where very high yielding wheats are grown, processing of wheat starch for more industrial applications has become very popular in the last two to three years.

The process of manufacturing wheat starch vs. cornstarch also has an impact both on economics and the quality of the starch for industrial applications. Corn starch has a so called "bottled up" process where relatively small quantities of water are discharged from the process for waste treatment. The cornstarch process basically yields one grade of starch in a relatively pure form. The wheat starch process is difficult to "bottle up" and waste treatment becomes a major cost when 8 to 10% of the total solids processed end up in wastewater that requires treatment before it can be discharged to the environment. The wheat starch process also yields two grades of starch — a premium wheat starch and a "B" grade of starch which is slightly tan in color and inferior for many typical starch applications.

So where does this discussion take us when we want to talk about industrial uses of wheat starch?

One last mention of an industrial use for wheat starch is in the area of degradable plastics. Almost exclusively, cornstarch is used in this application in the U.S. I have heard of research in Europe where wheat starch may have a niche in this application where small wheat starch granules fit nicely between the plastic molecular structure thereby making a smoother texture plastic film.

Wheat starch is naturally very white in color. It does not require bleaching as some cornstarches require. This makes it a natural for laundry starch applications and paper surface applications.

Wheat starch is unique in the starch kingdom in that it has two definite size populations 2 microns to 10 microns and 20 microns - 35 microns, and it is elliptical in shape. This large elliptical shape makes wheat starch ideal for an application where the wheat starch granules protect ink capsules in carbonless paper before you rupture the capsules with a ballpoint pen or a typewriter key.

Wheat starch can also be used in the wet end of paper making to increase the strength of the finished paper. Some chemically treated starches such as cationic starches are used in this application since it carries a positive charge and is attracted to the negatively charged cellulose. Wheat starch can also be used at the size press or for coating applications.

Wheat starch is dried by two basic processes: flash or spray drying, and drum drying. In the flash or spray drying technique, the starch is uncooked and usually requires cooking before it is used. In the precooked process, the wheat starch is cooked and dried at the same time on the surface of a drum drier. Precooked starches are ideal for applications such as foundry core binders, oil well drilling, mud thickening, and wallpaper adhesives. It is also used in spray or building coatings for wallboard. Uncooked starches are used in paper manufacturing as previously mentioned and are used as an adhesive for corrugated paperboard.

In Midwest Grain Products' wheat starch plants, part of the starch is used to manufacture alcohol, much of which is used in the industrial sector. Ethyl alcohol made from wheat starch is used in pharmaceuticals, hair sprays, personal care products, liquid detergents, and as an octane booster in gasoline.

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INDUSTRIAL USES FOR CORN STARCH

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Excess world-wide agricultural production capacity, even with the severe drought in 1988, is expected to remain well into the 21st century. Agricultural commodities are excellent feedstock materials for industrial products; these products could successfully penetrate the massive industrial market if they are superior in quality, less costly, or have other desirable features, such as environmental advantages. Examples of industrial use of starch include plastics and bioprocesses.

Polymer composites incorporating corn starch have the potential to secure a real share of the packaging market in the near term. Starch when added to plastics, enhances many physical properties and may reduce negative effects on the environment. Corn starch is competitive in price and can be run on the same equipment as the pure resin products. There is a loss in mechanical strength and changes in composition of the composites when the starch/plastic composites are exposed to various environments (soil, garbage, anaerobic digester, and air). The plastics lose from 25 to 50% of their strength with disappearance of the starch; scanning electron microscopy analysis confirms removal of starch by microorganisms. Changes in the composite are also chemically-induced. The extent of loss depends on the treatment and the environment. The starch/plastic composites are a promising first step in reducing the volume of solid waste generated every day.

Corn and other agricultural products are excellent feedstocks for the production of industrial chemicals such as lactic acid, which among other uses includes biodegradable plastics. Efficient economical processes are being developed by isolating unique microbes, establishing optimal conditions (nutritional, physical, and chemical), and determining superior methods of product recovery (membrane associated reactive extraction).

Economic feasibility is a must for commercialization of the products. The impacts of using agricultural products for industrial purposes could be quite important to local, state, and the U.S. economy. Results from the development and commercialization of efficient, economical processes oriented toward industrial markets will be reduced surpluses, increased value of agricultural products, greater industrial development, increased economic activity in local areas, wise use of our resources, and reduced farm program costs.

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USE OF SOYBEAN OIL AND THE PRODUCTION OF PRINTING INK

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During the 1980's, the American Newspaper Publishers Association, a trade association representing the newspapers of North America, conducted research to find alternative oils to replace the petroleum oil in the formulations of inks used to print newspapers. In 1986, ANPA licensed nonpetroleum newsink formulations using soybean oil and commercial production commenced. Soybean oil has proven to be a good alternative oil because its solvency of resin binders has improved the dispersion of the color pigments within the ink. Color reproductions using soy oil color inks produced clearly superior prints when compared to petroleum based color inks. Soy oil based color inks have become a major market force in the 100 million pound per year color newsink market. The use of soybean oil in the 350 million pound per year black newsink market has been limited because of the cost differential between petroleum and soy oil and the lack of performance enhancements seen with color soy oil inks. Now other printing industries are investigating the substitution of soy oil in their printing inks.

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VEGETABLE OIL USE WITH AGRI-CHEMICAL CROP PROTECTANTS

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The use of petroleum oil for various pest control applications has been recognized for many years. By contrast, the use of vegetable oils such as soybean and other crop origin oils in the formulation and application of agri-chemicals is relatively recent, dating mostly to the early 1970's. The large surplus of vegetable oils during the last several decades has been the major incentive for the research and promotion of these oils for these purposes. An especially attractive feature of vegetable oils is that they are renewable resources produced by growers.

A considerable amount of research with vegetable oils, especially soybean oil, was conducted from 1982 to 1985, primarily stimulated by the American Soybean Association. This and other research supported by other commodity groups has shown that many vegetable oils are as effective as petroleum oil for use as diluents or adjuvants with many agri-chemicals. Further, they are useful in the formulation of a wide range of agri-chemicals. Currently, Monsanto Co. and ICI Americas are formulating several of their agri-chemicals in soybean oil.

The potential market for any product is dictated by its usefulness and advantages compared to alternatives. The adoption of vegetable oils for use with agri-chemicals will be largely determined by its market price in relation to petroleum oil. Currently, vegetable oils are more expensive per unit than petroleum oil, resulting in a relatively slow acceptance for the formulation and application of agri-chemicals. Further, vegetable oils prices usually are more dynamic than petroleum prices, resulting in considerable fluctuations. Price stability and predictability is highly desired by manufacturers, retailers, and the final user of a product. Producers of agricultural commodities highly prefer to use products they produce, but rarely are willing to pay a premium price unless the product offers substantial advantages. Nonetheless, the efficacy of vegetable oils in the formulation and application of agri-chemicals and their renewable nature highly suggests that they will be a market factor in the future.

COMMERCIAL APPLICATION OF SOYBEAN PRODUCTS

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LEGISLATIVE OUTLOOK FOR AGRICULTURAL INDUSTRIAL COMMERCIALIZATION

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FOOD FOR THOUGHT: A POLICY PROSPECT FOR THE 1990'S

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PRODUCTION AND MARKETING OF SPECIALTY CROPS

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Specialty oilseed crops provide particular challenges in both the production and marketing whether the end use is industrial or edible. Production levels of any nonprogram or specialty crop tends to vary from year to year according to acres available to plant that don't sacrifice program benefits. Acreage swings cause marketing challenges when dealing with small, specialty markets.

Commercialization of industrial uses of agricultural commodities has been an area of emphasis for many businesses for decades. Good marketing involves exploring all possible applications. Many uses have come and gone, others become steady, reliable markets. With respect to new developments, rarely are applications commercialized that provide steady, sizeable markets. The roles of the grower, processor and marketer in new market development should be specified in advance of production. Too many times production is available without the market.

COMMERCIALIZING INDUSTRIAL RAPESEED PRODUCTION

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High erucic acid rapeseed (HEAR) oil is used in a variety of industrial applications including metalworking, lubrication, and factice production. HEAR is also a source of erucic acid, which is utilized in the production of several specialty derivatives. The majority of HEAR oil used domestically has historically been imported from Canada and Eastern Europe. Over the past three years, Calgene has implemented a domestic HEAR production program, reducing dependence upon foreign sources. The objectives, development, and logistics of the Calgene HEAR program will be discussed along with complementary effects on domestic canola production and future genetically engineered oils.

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COMMERCIALIZATION OF NATURAL FIBERS

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The floss from the milkweed plant offers significant potential as a new crop in Nebraska. The first steps have been taken to develop this potential. The project has been described as exemplary public/private cooperation contributing to economic development based on Nebraska's agriculture.

Milkweed is a very interesting plant which has characteristics that offer several possibilities for the development of marketable products. The milky sap has been used as a raw material (latex) in the production of a low-quality rubber. The sap has also been used in a laboratory process resulting in a substitute of crude oil at a prohibitively high cost. At the present time, the floss, which is produced in the seed pod, offers considerable potential for product development.

The individual, single-celled, hollow fibers are coated with a natural wax which is moisture resistant. These characteristics make the floss a competitive insulating material which can be used as floss filler in high-value items such as comforters, sleeping bags, and ski jackets. Extensive testing has resulted in the decision by the project organizers to concentrate on products which blend current insulating materials (down synthetics) with milkweed floss. Such blends can be used as loose filler in some products and as non-woven fabric in others. Tests at the University of Nebraska, Kansas State University, and other reputable institutions verify the high insulating value of milkweed floss used in both configurations.

Production testing, at several locations in the United States, indicates that Nebraska offers an advantageous environment for the production of milkweeds as a crop. Projected production costs and yields are encouraging. Research will almost certainly increase production efficiency and yield. Progress in the development of harvesting and processing equipment has exceeded our expectations. The planting and cultivation equipment necessary is already present on typical Nebraska feed grain farms.

A research program is being established at the Institute of Agriculture and Natural Resources at the University of Nebraska with federal, state, and private support.

Natural Fibers Corporation, headquartered in Ogallala, Nebraska, is the business entity which was established for the development of the project. The Nebraska Research and Development Authority and a limited number of private investors have injected the first risk capital into the project; more will be needed.

THE PROCESS OF DECISIONMAKING CONCERNING NEW PRODUCTS

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THE IMPORTANCE OF THE USE OF LIVESTOCK CO-PRODUCTS NOW

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When starch is used as an industrial feedstock, such as in fuel alcohol production, co-products are produced. The optimal utilization of these co-products is critical to the economic feasibility of using starch for industrial purposes.

Grains contain approximately 67% starch. Therefore, when the starch is removed, approximately 1/3 of the original grain is recovered as co-products. Depending upon the type of grain milling, a number of co-products can be produced. This can be simplified if we discuss them based on their nutritional characteristics. There are three components of the corn kernel which is the primary grain used. The most important component is the protein. The second component is the fibrous hull and the third is the soluble components. Each of these is distinctly different nutritionally.

Protein: Corn protein is unique. It has relatively poor amino acid balance and, therefore, it is not a good protein source for people, pigs and chickens. However, the protein has great characteristics for ruminants, cattle and sheep. Corn protein is not digested in the rumen of cattle but is subsequently digested in the intestinal tract. This protein is called bypass protein. This characteristic is important for cattle with high protein requirements—primarily dairy cows and growing beef calves. The challenge is to get this protein in an appropriate form to the appropriate animals, and to do it economically. Drying costs and transportation are important factors.

Hull: The corn hull makes up over 12% of the kernel. It is high in fiber but this fiber is highly digested by ruminants. In many feeding situations, the corn hull (bran) is equivalent to corn grain as a source of energy. Again, the challenge is to get the bran to the appropriate animals in an economical manner.

Solubles: A soluble fraction is condensed to a molasses-like consistency—distillers solubles or corn steep liquor. These products are often dried on the bran or distillers grains as a means of disposal. The opportunity for using these products in liquid cattle feeds or blocks is excellent but relatively undeveloped.

In conclusion, the opportunity for increasing the use of co-products is excellent. However, new ideas and research are needed to optimize the economics.

NEW OPPORTUNITIES FROM THE PACKING HOUSE

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For some time packers/renderers have been recycling packing house waste back into animal feed with products such as blood meal, meat scraps, and meat and bone meal. The pharmaceutical industry has been a recipient of beef gallstones and pork pancreas. The pet food industry both domestically and internationally has shown strong demand especially for many items that previously were consumed by the public.

As we approach the next century we find that a mature pet food industry coupled with the recent EEC hormone ban and the previous 3rd Country Directive have severely curtailed shipments to that geographic area and have greatly impacted the "dropcredit" for livestock in an adverse matter. New products are being developed from blood, bones, and the lard rendering process, that are finding their way into the marketplace as binders and emulsifiers in meat and bakery products, glues and as milk replacers for baby animals. New projects may extract proteins and essential amino acids from offals and pork skins in order to realize a higher value.

WASTE NOT! WANT NOT!**What Was Unique About Farming in the 1980's and Planning for the Years Ahead?**

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We cannot control the weather, the market price for goods, or the cost of bought input supplies and services. The only major part of a farm operation that management has control over is efficiency. The in-word today is "low input agriculture". I believe that some planners take this to mean that we use less and get less production but have higher net profits!

Mason-Dixon Farms in 1948 consisted of 12 milk cows, 1000 laying hens, 10 sows, and fattening 30-40 steers per year on a 365 acre farm. This was accomplished by long hard work and not much pay. It was a family farm to be sure because there was no profit to pay for additional help.

We set about to change all this!

The decision was made to milk cows and to use the total acreage to grow forage crops for the herd. (Forage crops, because the soils on our land were not suited for grain crops.)

We built our first milking parlor to improve our labor efficiency. With this plan in place, our labor income improved and expansion followed. Additional land was bought. Today the farm has 2100 acres for forage production. The herd consists of 1275 milk cows and 1100 replacement heifers. The 21 million pounds of milk products are processed and retailed from the farm. Fifteen family members make up the "family farm", which employs 31 additional people.

With this herd growth we had a major problem of handling manure. The old methods were costly and time consuming, therefore, very inefficient. After much research and reading, a decision was made in 1978 to build a biogas digester for digesting manure to make electricity.

A lot of effort went into the development of a successful digester that would, as an extra benefit, meet all the electricity needs of the farm. We accomplished that, and as a result were invited by President Carter to the White House to receive an award as the first energy-self-sufficient farm in the country.

Ten years later, we still meet all our electricity needs for the farm. In 1988, we sold excess power (about 1/3 of the 876,000 KWH produced) to the local power company. The savings from the cost for the electricity that we would have used, plus the income for the sale of the surplus netted us about \$92,000.00, in 1988. This was accomplished through an investment of \$250,000.00. With the low annual maintenance cost for minor repairs it will be an income service for many years to come.

Some of the other benefits from digesting manure are as follows:

- It takes about one man-hour per day in the care of the process.
- It allows us to store all manure in holding lakes (having a 26-acre surface area).
- For "FERTIGATION" digested manure slurry has much less odor because the ammonia in raw manure is changed to ammonium nitrate in the digesting process. Nitrogen in this form is more stable, allowing it to be stored in holding lakes without significant loss, ready for crops to utilize.

The digested slurry is piped through three miles of underground eight inch PVC pipe to five Valley center pivots. We have not used commercial fertilizer on this land for 10 years.

Another unexpected benefit from digested manure is that the PH is 7.3 to 7.5. We no longer have to apply lime every year or two. We had been applying it at the rate of one ton/acre.

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Using the slurry "fertigation" on these low-moisture acres has increased our production of silage from 15 tons per acre to 40 tons per acre. Even in the drought year of 1988, we yielded 40 tons per acre, while nearby farms saw yields of only 3 to 8 tons per acre.

This has truly been the best crop insurance that we could buy.

I believe that this type of management style gives us a promising future in production agriculture for the competitive years ahead.

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TECHNICAL SUPPORT FOR COMMERCIALIZATION

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There are five basic components required for commercialization of any products. These components are:

1. Reliable raw material supply
2. Feasible conversion technology
3. Economical production facility
4. Available market niche
5. Suitable business plan

This discussion will focus on the unique problems and opportunities found in developing industrial uses for agricultural products. We will examine strategies for overcoming some of the problems and capitalizing on the opportunities through case studies of current and potential agriculturally derived industrial products.

POTENTIAL FINANCING FOR INNOVATIVE AGRICULTURAL PRODUCTS

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The commercialization of an innovative agricultural product can be difficult for many reasons, not the least of which is inadequate financing. There are numerous sources of financing, and financing vehicles which can be used. But in order to attract the financing in the most desirable form and quantity for a new product, some basic information must be well developed.

During this session there will be a brief discussion on the information that is needed to attract appropriate financing for a new product. In addition, possible sources of that financing will be explored.

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INITIATING AND MANAGING CHANGE

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**NEW DIRECTIONS FOR NEW USES OF FARM PRODUCTS:
MAKING THE PRIVATE SECTOR-FEDERAL PARTNERSHIP WORK**

**The Honorable Dan Glickman
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**DEVELOPING YOUR STRATEGY WITH INDUSTRIAL USES OF AGRICULTURAL
COMMODITIES**

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COMMERCIALIZING INDUSTRIAL USES OF AGRICULTURAL COMMODITIES

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Conference participants are encouraged to visit the exhibit room during breaks.

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"A KANSAS INITIATIVE"

The pursuit of new uses and markets for agricultural products has occurred in one manner or another nearly as long as agricultural production itself. Such efforts were most often driven by the desire to improve the welfare and income of the producers.

Over history, efforts ranged from producing some excess to be used for trade between tribes, to national food self-sufficiency, to national defense needs, and to modern day international trade. Generally speaking, the success of these efforts have served mankind well.

However, as we all know and as the facts point out, the more modern day market development efforts including expanded domestic consumption, international markets, and some industrial use have not been able to be done to a level that has always provided commodity price ranges high enough to result in reasonable incomes to producers. Domestic market consumption adjustments, increased U.S. production capabilities, increased production and export competition from other countries, implementation of unfair trade practices, etc., have skewed the relation between supply and demand for agricultural products.

The bottom line is that efforts to develop new markets and alternative uses for our agricultural production must continue. It is critical however, that such efforts must include traditional areas but with certainty they must also look to non-traditional areas which includes industrial and non-food uses.

The agricultural industry in Kansas must expand its opportunities to sell non-food products, in addition to food items. It must become a business of energy and materials, as well as one of food and fiber. The USDA has predicted that by the year 2025, less than two-thirds of the land currently in production may be needed to provide sufficient quantities of food for all presently dependent on American agriculture. Kansas land can be productively used to grow

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ag products for non-food uses. These potentials also can serve economic development for rural Kansas.

Changes are needed in existing agricultural and commercialization policies and programs to reap the potential represented by industrial products from agricultural commodities will provide areas of challenge and leadership for state governments. Agriculture must expand its horizons beyond the tradition of providing food and fiber and include industrial materials and energy. This will help support the industrial base from renewable resources and serve as part of agriculture's portfolio. Private-public partnerships in pre-commercial activities represents an excellent approach to enhance adoption of research advances because costs and risk are shared. In return, more research is moved into the marketplace and hence farmers have expanded market opportunities and greater potentials exist for economic development in rural Kansas.

However, it should be remembered that the strength and effectiveness of national and regional programs for commercialization will only benefit Kansas in proportion of the strength and effectiveness of the state's program initiatives. Such initiatives should be broad-based and encompass the financial and technical resources to provide those linkages between agricultural producers and manufacturers. This technical contribution is needed to provide discussion and dialogue between the producer and the new technologies represented in these non-traditional uses.

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Previous Commercialization Initiatives

I. Wheeler McMillen, who is now 97 years of age, and Henry Ford chaired the first national conference on industrial uses for agricultural commodities in Dearborn, Michigan, in the mid 1930's. Leaders in agriculture, industry and science became mutually interested in finding new uses and markets for America's farmers. This coalition and its actions gave rise to the USDA's five regional laboratories. Of particular interest to Kansas is the Northern Regional Research Center at Peoria, Illinois, and their research efforts in the area of enhanced use of plant materials as renewable resources.

II. Task Force Report on Non-Food Uses of Kansas Agricultural Products

On December 10, 1987, the Kansas State Board of Agriculture approved the creation of a task force which would study and recommend specific proposals for the state to pursue in the development of non-food uses of agricultural commodities. The Task Force, made up of experts from industry, academia, and government, were charged with two tasks:

1. To determine the feasibility, both now and in the future, of using Kansas agricultural for industrial uses.
2. To determine a course of action for Kansans to take in their efforts of evaluating and commercializing non-food uses.

Members of the group unanimously agreed that substantial opportunity is available to Kansas through the further development of industrial uses. These possibilities represent an extension of the present course the state is pursuing to emphasize value-added opportunities with agricultural commodities as well as other economic development actions.

Of great importance, the task for concluded, is the need to focus by the state on the commercialization of existing technologies, identify

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innovative product potential, develop consortiums with private industries involved in non-food utilization, and recruit them to Kansas. Other recommendations were included in the groups report as well.

III.

Commercializing Industrial Uses
for Agricultural Commodities Conference
March 28 - 29, 1989
St. Louis, Missouri

The State Departments of Agriculture in Kansas, Iowa, Missouri, and Nebraska have declared their support for utilization of Agricultural products and focusing on innovative ways to create new markets for products is important to the rural economies of the midwestern states.

The conference was designed to generate information from experts in industry, universities, research laboratories, and public agencies. The conference concluded, there were three distinct areas of industrial uses of agricultural commodities. The first is non-food uses of present crops such as wheat, corn, soybeans, and sorghum; the second opportunity is in non-food uses of animal co-products from the livestock processing industry; and the third area is development of new crops for industrial uses. Ultimately, the conference concluded that to accrue these potentials will take a systematic relationship and cooperation among all interested groups including universities, extension services, commodity commissions, congress, state legislatures, state agencies and private enterprise. Such a consortium is critical to effectively address commercialization.

IV.

Commercializing Industrial Uses for
Ag Commodities National Conference
March 14 - 16, 1990
Washington, D.C.

As a result of the attention and support developed for industrial uses from the four-state regional conference, this national conference was conducted.

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The conference planning committee was made up of representatives from state government, federal government, agriculture producers, commodity groups, researchers, and industry.

Recommendations from this national conference include:

1. Work for inclusion in the 1990 Farm Bill an "Industrial Use Title" and funding to accelerate commercialization and marketing of non-food use products. These funds to be used to leverage cooperative actions from state and private programs.
2. Use a "systems" concept to bridge the existing gap between research discoveries and the point where private firms are willing to invest in commercial production.
3. Structure closer working relationships between private and public sectors and implement mechanisms to expedite movement of research into commercial products.
4. Establish creative financial packages to share risks and costs to assist innovative firms to enter production of industrial products from ag products.
5. Encourage production of industrial crops by developing commodity programs to encourage rather than discourage farmers from growing potential non-food use crops.

An additional and dramatic result of the national conference is the formation of a national advocacy organization for the commercialization of industrial uses for agricultural production.

ELEMENTS OF THE KANSAS DEVELOPMENT & COMMERCIALIZATION
OF NON-FOOD USES FOR AGRICULTURAL PRODUCTS PROGRAM

Mission:

The Mission of the Program is to enhance the economy of the State of Kansas by providing technical and marketing information and, research and development programs to foster innovation and creation of Kansas enterprises involved in the commercialization of non-food products from agricultural commodities.

The Program will serve as the primary state agency for all actions related to development, and commercialization of non-food uses for agricultural products.

Elements:

1. Coordination, Communication, & Education

The program will cooperate and coordinate with other Kansas agencies to support business development in Kansas agriculture. The program will serve as the main source and clearinghouse for technical information related to non-food uses of agricultural products. Building public awareness, communicating results, information gathering, and education for non-food utilization will also be activities of the program.

2. Organize, conduct, sponsor or cooperate with and assist both the private sector and educational institutions to conduct special seminars, conferences and demonstrations related to the stimulation of commercialization of industrial uses of agricultural products.

3. Finance, conduct, or cooperate in the financing of scientific, technological, business, financial or other investigations which are related to economic development involving non-food uses. This will be accomplished by making and entering into contracts, including the provisions of grants, loans, and other forms of assistance.

4. Prepare, publish, and distribute such studies, reports, and other materials considered appropriate, subject only to the maintenance and responsibility for confidentiality of the client proprietary information.
5. Solicit, study and assist in preparation of feasibility studies and business plans of new or established enterprises involved in utilization of agricultural products for industrial uses.
6. There will be created a "Development and Commercialization of Non-Food Uses For Agricultural Products" enterprise seed capital fund to which shall be credited any state funds specifically so designated. The program may credit the fund with unrestricted appropriations, gifts, donations or grants received from any source. The program may use the enterprise seed capital fund as follows:
 - 1) To carry out the purposes of the program through investments in qualified securities and through forms of financial assistance authorized by enabling legislation.
 - 2) To pay all or a portion of the program's operating expenses from revenues generated by the seed-capital fund investments which shall be an amount sufficient to allow the program to undertake and efficiently manage its responsibilities.
 - 3) To invest in such other investments as are lawful for Kansas fiduciaries.
7. Annual Report; the program shall publish an annual report which shall include an audit in accordance with accepted accounting principles. The annual report shall specifically account for the ways in which

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the purpose of the program have been carried out and recommendations as to what changes in activities of state and federal government are necessary to better address the purposes described in enabling legislation and the program's annual plan.

Organization:

Perhaps the most critical aspect of the organizational structure of a Kansas Development and Commercialization of Non-Food Uses Program will be the make-up of the Board of Directors or The Advisory Council. It is very important that agriculture interests and appropriate private sector interest are provided proper representation. Certainly academic, government agency, and Legislative interests should properly be represented but the success of the program will be driven by agriculture, agri-business, and commercial interests and direction.

It is my opinion that the effectiveness of K.T.E.C. (Kansas Technology Enterprise Corporation), in general and the level of address of the role of agriculture in economic development is limited greatly because the statutorily prescribed Board of Directors does not ensure reasonable representation of agriculture and agribusiness. On the other hand, KVAC with its strong representation of private sector, agriculture, agribusiness serving with legislative and university interests has been well served by its Advisory Council.

The projected goals and objectives of the Program together with its anticipated operational functions being directed towards "hands on" assistance to support and expedite commercialization of non-food uses through existing and/or new enterprises appears to have substantial similarities to the goals and operational functions statutorily assigned to the Kansas Technology Enterprise Corporation.

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Statute sections 74-8101 through 74-8115 - K.T.E.C. was developed and passed as part of the economic development package of 1987. It provides a unique structure and innovative means for the state government to cooperate with private industry.

Therefore, consideration should be given to integrating the new program into the K.T.E.C. framework.

Specific actions include:

- I. Amend the current statutes to provide for a change in the Board of Directors of the Kansas Technology Enterprise Corporation. The purpose being to provide basic representation of agriculture and agri-business on the board. Such amendment should specify that the Secretary of Agriculture serve on the K.T.E.C. Board of Directors.
- II. Develop a specific Kansas Initiative for Development and Commercialization of Non-Food Uses for Agricultural Products.

Subtitle G of the 1990 Farm Bill represents a milestone in the efforts to secure legislation to authorize the U.S. Department of Agriculture to recognize and research non-food use products as a major opportunity for growth in agriculture.

Key sections include:

1. Alternative Agricultural Research and Commercialization Center:
The center shall be operated as an independent entity within USDA headed by a director.
2. Alternative Agricultural Research and Commercialization Board:
The Board shall consist of nine members, with the majority representing private commercialization.
The Board will be responsible for general supervision and policy control of the Center and Regional Centers.

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3. Regional Centers:

The Board shall establish not less than two nor more than six Regional Centers.

4. Alternative Agricultural Research and Commercialization Revolving Fund:

- a) \$10,000,000 FY 1991
- b) \$20,000,000 FY 1992
- c) \$30,000,000 FY 1993
- d) \$50,000,000 FY 1994
- e) \$75,000,000 FY 1995 - 2000

A detailed proposal to establish the Kansas Initiative for Development and Commercialization of Non-Food Uses for Agricultural Products will be developed and presented to K.T.E.C. Board of Directors for consideration and implementation.

Key fundamentals will include:

1. The proposal will be designed to provide an excellent state program as well as becoming a recognized regional center.
2. It will be designed to facilitate public/private cooperation by utilizing available KTEC statutory authorities; will be administered by a board of directors which will reflect a strong balance of private industry, academic, and government representatives.

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BRIEF OVERVIEW OF IMPACTS FOR AGRICULTURE:

- A. Kansas grown milo into manufacturing of wallboard and construction adhesive.
- B. Atchison company converts wheat into carbonless paper, building materials and wallpaper paste.
- C. Packing house byproducts. Current value \$100/head.
 - 1. Hides to leather
 - 2. Pharmaceutical uses. Projected increase of \$30 to \$35 per animal.
- D. Corn for manufacturing chemicals projected \$100 billion.
 - 1. Organic acids.
 - 2. Bio-degradable plastics and films.
 - 3. Calcium magnesium acetate.
 - 4. Encapsulation.
- E. Ethanol - 400 million bushels per year -- \$1 billion; by year 2000 projections of 800 million bushels.
- F. Soybean oil for dust supplement.
- G. Soybean oil for printing ink.
- H. Wheat starches and glues.
- I. New crops
 - 1. Canola
 - 2. Rapeseed

It is impossible to predict what the potential impact to producers will be from expanded commercialization of non-food uses from ag commodities. However, given what the current impact is, the future will continue to be significant.

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Subtitle G—Alternative Agricultural Research and Commercialization

SEC. 1657. SHORT TITLE, PURPOSES, AND DEFINITIONS.

(a) *SHORT TITLE.*—This subtitle may be cited as the "Alternative Agricultural Research and Commercialization Act of 1990".

(b) *PURPOSE.*—Through the encouragement of and the provision of assistance to agricultural research, development, and commercialization, it is the purpose of this subtitle—

(1) to authorize research in modification of agricultural commodities, and associated research, in order to develop and produce marketable products other than food, feed, or traditional forest or fiber products;

(2) to commercialize new nonfood, nonfeed uses for traditional and new agricultural commodities in order to create jobs, enhance the economic development of the rural economy, and diversify markets for raw agricultural and forestry products;

(3) to encourage cooperative development and marketing efforts among manufacturers, financiers, universities, and private and government laboratories in order to assist the commercialization of new nonfood, nonfeed uses for agricultural and forestry products;

(4) to direct, to the maximum extent possible, research and commercialization efforts toward the production of new nonfood, nonfeed products from agricultural commodities that can be raised by family-sized agricultural producers; and

(5) to foster economic development in rural areas of the United States through the introduction of new nonfood, nonfeed products obtained from agricultural commodities.

(c) *DEFINITIONS.*—For purposes of this subtitle:

(1) The term "agricultural commodity" means a plant or animal species (including a species propagated or raised in a controlled environment or a tree species) and the products derived from that species.

(2) The term "alternative agricultural product" means a new use, application, or material that—

(A) is derived from an agricultural commodity; and

(B) is not in widespread commercial use and is not expected to significantly displace a use, application, or material derived from an agricultural commodity that already is in widespread commercial use.

(3) The term "Board" means the Alternative Agricultural Research and Commercialization Board.

(4) The term "Center" means the Alternative Agricultural Research and Commercialization Center.

(5) The term "commercialization" or "commercialize" includes—

(A) activities associated with the development of alternative agricultural products or industrial plants;

(B) the application of technology and techniques to the development of industrial products and alternative agricultural products; and

(C) the market development of new nonfood, nonfeed uses of new and traditional agricultural commodities and processes that

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will lead to the creation of goods and services that may be marketed for profit.

(6) The term "Fund" means the Alternative Agricultural Research and Commercialization Revolving Fund.

(7) The term "host institution" means an existing entity that is located in the region that is—

(A) a university or other institution of higher education;

(B) a Department of Agriculture laboratory;

(C) a State agricultural experiment station;

(D) a State cooperative extension service facility; or

(E) another organization that is involved in the development or commercialization of new nonfood, nonfeed uses for agricultural commodities, or is involved in rural economic development.

(8) The term "new nonfood, nonfeed product development" means targeted research, including fundamental and applied research, concerning—

(A) the production and processing of agricultural commodities for the purposes of developing new nonfood, nonfeed products;

(B) the uses of new nonfood, nonfeed products; and

(C) steps necessary to make a nonfood, nonfeed product available for the marketplace.

(9) The term "new nonfood, nonfeed product" means an item that is primarily not a food, feed, or traditional forest or fiber product, including an item that exists but is not commercially available from an agricultural commodity.

(10) The term "nonprofit organization" means an organization that is—

(A) described in section 501(c) of the Internal Revenue Code of 1986; and

(B) exempt from taxation under section 501(a) of such Code.

(11) The term "Secretary" means the Secretary of Agriculture.

(12) The term "traditional forest or fiber product" means a forest or fiber product that is derived from forest or agricultural materials and does not have substantial new properties.

SEC. 1658. ALTERNATIVE AGRICULTURAL RESEARCH AND COMMERCIALIZATION CENTER.

(a) **ESTABLISHMENT.**—The Secretary of Agriculture shall establish an Alternative Agricultural Research and Commercialization Center to carry out the purpose of this subtitle. The Center shall be operated as an independent entity within the Department of Agriculture under the general supervision and policy control of the Secretary.

(b) **FUNCTIONS.**—The Center shall have the authority to—

(1) make grants to, and enter into cooperative agreements and contracts with, eligible applicants for research, development, and demonstration projects in accordance with section 1660;

(2) make loans and interest subsidy payments and invest venture capital in accordance with section 1661;

(3) collect and disseminate information about State, regional, and local commercialization projects;

(4) search for new nonfood, nonfeed products that may be produced from agricultural commodities and for processes to produce such products;

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(5) administer, maintain, and dispense funds from the Alternative Agricultural Research and Commercialization Revolving Fund to facilitate the conduct of activities under this subtitle; and

(6) engage in other activities incident to carrying out its functions.

(c) **DIRECTOR.**—The Center shall be headed by a Director, who shall be appointed by the Board and approved by the Secretary of Agriculture. The Director shall receive basic pay at the rate provided for level IV of the Executive Schedule under section 5315 of title 5, United States Code. The Director shall be appointed for a term of five years, subject to removal by the Board before the end of that term.

(d) **RESPONSIBILITIES OF THE DIRECTOR.**—Subject to the general supervision of the Board, the Director shall be responsible for the overall management of the Center and the implementation of general policies respecting the management and operation of programs and activities of the Center. In carrying out such responsibilities on behalf of the Center, the Director shall—

(1) provide for appropriate peer review of—

(A) applications for grants, contracts, and cooperative agreements submitted under section 1660 and applications for financial assistance submitted under section 1661;

(B) the conduct of research for which assistance is provided by the Center; and

(C) research findings or reports resulting from grants, contracts, and cooperative agreements administered by the Center as the Board determines necessary;

(2) require, where appropriate, licensing and patent agreements, copyright fees, royalties, or other fee arrangements on the sales of products, new uses, applications technologies, or processes developed through assistance provided through a grant made, contract or cooperative agreement entered into, or other assistance provided, under this subtitle; and

(3) take appropriate action to ensure that all channels for the dissemination and exchange of agricultural products and processes research are maintained between the Center and other agricultural, scientific, and business entities; and

(e) **STAFF.**—Upon the request of the Director, the Secretary may detail, on a reimbursable basis, any of the personnel of the Department of Agriculture to assist the Director in carrying out the duties of the Director.

(f) **EXPERTS AND CONSULTANTS.**—The Director may procure temporary and intermittent services under section 3109(b) of title 5, United States Code.

SEC. 1659. ALTERNATIVE AGRICULTURAL RESEARCH AND COMMERCIALIZATION BOARD.

(a) **ESTABLISHMENT OF BOARD.**—The Secretary shall establish the Alternative Agricultural Research and Commercialization Board.

(b) **MEMBERS.**—The Board shall consist of nine members appointed by the Secretary as follows:

(1) One member who shall be an employee of the Department of Agriculture.

(2) Four members, of whom—

(A) at least one shall be a representative of the leading scientific disciplines relevant to the activities of the Center;

(B) at least one shall be a producer or processor of agricultural commodities; and

(C) at least one shall be a person who is privately engaged in the commercialization of new nonfood, nonfeed products from agricultural commodities.

(3) Two members who—

(A) have expertise in areas of applied research relating to the development or commercialization of new nonfood, nonfeed products; and

(B) shall be appointed from a group of at least four persons nominated by the Director of the National Science Foundation if such nominations are made within 60 days after the date a vacancy occurs.

(4) Two members who—

(A) have expertise in financial and managerial matters; and

(B) shall be appointed from a group of at least four persons nominated by the Secretary of Commerce if such nominations are made within 60 days after the date a vacancy occurs.

(c) RESPONSIBILITIES.—The Board shall—

(1) be responsible for the general supervision and policy control of the Center and Regional Centers;

(2) determine (in consultation with the advisory council appointed under section 1661 and those Regional Centers established under section 1663) high priority commercialization areas to receive assistance under that section;

(3) review any grant, contract, or cooperative agreement to be made by the Center under section 1660 and any financial assistance to be provided under section 1661;

(4) make the final decision, by majority vote, on whether and how to provide assistance to an applicant;

(5) establish program policy, objectives, research and development, and commercialization priorities to implement this subtitle, through a process of public hearings to be initiated as soon as practicable after the establishment of the Board; and

(6) using the results of such hearings and other information and data collected under paragraph (5), develop and establish a budget plan and a long-term operating plan to implement this subtitle.

(d) MEETINGS.—The Board shall meet at the call of the chairperson or at the request of the Director, but at least three times each fiscal year. The location of the meetings of the Board shall be subject to the approval of the Director. A quorum of the Board shall consist of a majority of the members of the Board. The decisions of the Board shall be made by majority vote.

(e) TERM; VACANCIES.—The term of office of a member of the Board shall be four years, except that the members initially appointed shall be appointed to serve staggered terms. A member appointed to fill a vacancy for an unexpired term may be appointed only for the remainder of such term. A vacancy on the Board shall be filled in the same manner as the original appointment.

(f) CHAIRPERSON.—The members of the Board shall select a chairperson from among the members. The term of office of the chairperson shall be two years. The member appointed under subsection (b)(1) may not serve as chairperson.

(g) COMMITTEES.—The Board may establish one or more temporary committees with agricultural, scientific, technical, or other expertise, whose duties shall be to provide information, analysis, and recommendations, at

the request and direction of the Board, on scientific, technological, policy, and other matters, as determined necessary by the Board.

(h) **COMPENSATION.**—Members of the Board who are officers or employees of the United States shall not receive any additional compensation by reason of service on the Board. Other members of the Board shall receive, for each day (including travel time) they are engaged in the performance of the functions of the Board, compensation at a rate not to exceed the daily equivalent of the annual rate in effect for grade GS-18 of the General Schedule. All members of the Board shall be reimbursed for travel, subsistence, and other necessary expenses incurred by them in the performance of their duties.

(i) **RESTRICTIONS.**—

(1) **CONFLICT OF INTEREST.**—Except as provided in paragraph (3), no member of the Board shall vote on any matter respecting any application, contract, claim, or other particular matter pending before the Center, in which, to the knowledge of the member, such member, spouse or child of such member, partner or organization in which such member is serving as officer, director, trustee, partner, or employee, or any person or organization with whom such member is negotiating or has any arrangement concerning prospective employment, has a financial interest.

(2) **VIOLATIONS.**—Action by a member of the Board that is contrary to the prohibition contained in paragraph (1) shall be cause for removal of such member, but shall not impair or otherwise affect the validity of any otherwise lawful action by the Center in which the member or officer participated.

(3) **EXCEPTIONS.**—The prohibitions contained in paragraph (1) shall not apply if a member of the Board advises the Board of the nature of the particular matter in which such member proposes to participate in, and if such member makes a full disclosure of such financial interest, prior to any participation, and the Board determines, by majority vote, that the financial interest is too remote or too inconsequential to affect the integrity of such member's services to the Center in that matter. The member involved shall not participate in such determination.

(j) **AUTHORITY OF THE SECRETARY.**—Any final decision made under subsection (c) may be vetoed by the Secretary, and the Secretary shall inform the Board of the reasons for such veto.

SEC. 1660. RESEARCH AND DEVELOPMENT GRANTS, CONTRACTS, AND AGREEMENTS.

(a) **ELIGIBILITY.**—All public and private educational institutions, other public and private research institutions and organizations, Federal agencies, and individuals shall be eligible to receive a grant from, or enter into a contract or cooperative agreement with, the Center for a research, development, or demonstration project, as provided in this section.

(b) **COMPETITIVE BASIS FOR AWARDS.**—Grants made, and contracts and cooperative agreements entered into, under this section shall be selected on a competitive basis on the recommendation of a peer review system to be established by the Center. Such system shall contain peer review expertise in commercial production, product development, processing, and marketing of agricultural commodities as well as in scientific research.

(c) **SELECTION CRITERIA.**—The Board may select a research, development, or demonstration project to receive a grant, contract, or cooperative agreement under this section based on the likelihood that the project will

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result in creating or improving economically viable commercial nonfood, nonfeed products, applications, processes, or technologies that involve the use of raw or processed agricultural commodities. The criteria to be considered may include the following:

- (1) the prospect of developing technologies that could make it possible to use or modify existing agricultural commodities to provide an economically viable quantity of new nonfood, nonfeed products;
- (2) the potential market size of the new nonfood, nonfeed product, the likely time period needed to bring the product into the stream of commerce for general use, and the likely availability of the agricultural commodity used to produce the product;
- (3) the potential for job creation in an economically distressed rural area;
- (4) the anticipated State or local participation;
- (5) the anticipated financial participation of private entities;
- (6) the likely impact on reducing Federal crop subsidies and other Federal agricultural assistance program costs;
- (7) the unavailability of adequate funding from other sources;
- (8) the likely positive impact on resource conservation and the environment; and
- (9) the likely positive effect of helping family-sized farmers and rural communities near the affected agricultural and forested areas.

(d) SET-ASIDE OF FUNDS FOR CERTAIN PROJECTS.—

(1) IN GENERAL.—Not less than two-thirds of the funds obligated each fiscal year for grants, contracts, and cooperative agreements under this section shall be awarded only for research, development, and demonstration projects for which the applicant—

(A) has committed substantial funding and support from its own resources; and

(B) has entered into a cooperative agreement or other contractual arrangement with a commercial company domiciled in the United States that commits such company to—

(i) provide funds for at least 20 percent of the total cost of such project; and

(ii) engage in commercial production and sale of the marketable products, processes, uses, applications, or technologies developed through the project, under appropriate licensing, royalty, or other agreements.

(2) ANIMAL SOURCES.—Not more than 25 percent of the funds obligated each fiscal year for grants, contracts, and cooperative agreements under this section shall be awarded only for projects concerning new nonfood, nonfeed products derived from animal sources.

(e) LIMITATION ON FUNDS PROVIDED.—Funds committed by the Center for any project under a grant, contract, or cooperative agreement under this section shall in no case exceed two-thirds of the total cost of the project.

(f) PREFERENCE.—In selecting projects to receive funds, the Center may give preference to those projects for which the ratio of Center funds to non-Center funds would be lowest.

SEC. 1661. COMMERCIALIZATION ASSISTANCE.

(a) ASSISTANCE AUTHORIZED.—The Center, at the discretion of the Board, may provide to entities described in subsection (b) for projects commercializing new nonfood, nonfeed products using agricultural commodities, financial assistance in the form of—

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- (1) loans made or insured by the Center;
- (2) interest subsidy payments made by the Center (pursuant to an agreement between the Center, the lender, and the borrower) to the lender in amounts determined pursuant to the agreement;
- (3) venture capital invested by the Center in the form of a convertible debenture; and
- (4) repayable grants that are matched by private or local public funds and that are repaid as agreed in a contract between the Center and the entity.

(b) **ELIGIBLE ENTITIES.**—To obtain financial assistance for commercialization of nonfood, nonfeed products from the Center, an entity shall be a university or other institution of higher education, a nonprofit organization, a cooperative, or a business concern.

(c) **ADVISORY COUNCIL.**—The Board shall appoint an Advisory Council to advise the Board and Regional Centers concerning all applications for assistance submitted under this section. The conflict of interest provisions of subsection (i) of section 1659 shall apply to the Advisory Council. In appointing members of the Advisory Council, the Board shall ensure regional participation on the Advisory Council. The Advisory Council shall—

- (1) review (or coordinate the review of) the technical, engineering, financial, and managerial soundness and marketing potential of the applications;
- (2) by majority vote, make a nonbinding recommendation on each application submitted under this section;
- (3) monitor the progress of ongoing projects and provide technical and business counseling as needed;
- (4) monitor the operation of the Regional Centers; and
- (5) provide technical and business counseling to entities that are not seeking financial assistance from the Center, but which are engaged in commercializing nonfood, nonfeed uses of agricultural commodities.

(d) **APPLICATION REQUIREMENTS.**—

(1) **FILED WITH DIRECTOR.**—To obtain financial assistance from the Center under this section, an eligible entity shall file an application with the Director.

(2) **CONTENTS.**—An application submitted to the Director under paragraph (1) shall—

(A) describe the proposal of the entity for the commercialization of a new product consistent with this section, including documentation that such proposal is—

- (i) scientifically sound;
- (ii) technologically feasible;
- and
- (iii) marketable;

(B) provide documentation that adequate private sector funding is not available, but that the applicant has the ability to obtain matching funds from the public or private sectors;

(C) provide documentation that the applicant has invested in the project a significant amount of the applicant's own resources, including time and money;

(D) provide documentation that the product or process has broad application and has the potential to be commercially viable without continual assistance;

(E) provide documentation that the proposal has broad participation by representatives of the public sector, the financial community, the private business community, State and local governments, educational institutions, the farm community, the science and engineering communities;

(F) provide documentation that an established rela-

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relationship exists between the applicant and other entities to give the applicant access to private business assistance; (G) provide assurances of legal compliance by the applicant with the terms and conditions of the receipt of assistance under this section; and (H) provide assurances that the project will result in the creation of new jobs in rural communities.

(e) **PRIORITIES.**—The Board shall give priority to—

(1) applications that shall create jobs in economically distressed rural areas;

(2) applications that have State or local government financial participation; and

(3) applications that have private financial participation.

(f) **ADDITIONAL CRITERIA.**—The Board shall establish additional criteria for use in selecting among equivalent applications. Such criteria shall emphasize—

(1) the quantity and quality of jobs that are likely to be created in rural communities;

(2) the amount of the financial participation by State or local governments or private entities;

(3) the qualifications of the management to be used in the project;

(4) the potential market demand for the potential product to be marketed proportional to the financial assistance requested; and

(5) the likely level of returns to the Fund and the items described in paragraphs (2), (6), (8), and (9) of section 1660(c).

SEC. 1662. GENERAL RULES REGARDING THE PROVISION OF ASSISTANCE.

(a) **NOTICE OF RECEIPT OF APPLICATIONS.**—Not later than 30 days before the start of each period established by the Board for receipt of applications for financial assistance under section 1660 or 1661, the Board shall publish in the Federal Register a notice that it will receive such applications.

(b) **MONITORING.**—The Board shall monitor the progress of projects that receive financial assistance under this subtitle. Such monitoring may include on-site reviews by representatives of the Board, a Regional Center, or the Advisory Council, the requirement of written reports by recipients of assistance, and supportive business and technical counseling as needed by the recipient. The Board may use the Advisory Council appointed under section 1661 to assist in such monitoring.

(c) **AUDITING AND ACCOUNTABILITY.**—

(1) **REQUIRED.**—The Board shall establish a thorough and effective system of auditing and accountability to ensure that funds paid under section 1660 or 1661 are used by recipients only for the purposes for which those funds are provided by the Center.

(2) **DEMONSTRATED COMPLIANCE.**—The Board may require that recipients of financial assistance demonstrate that the use of financial assistance is in compliance with the agreement by which that assistance is provided.

(d) **INFORMATION EXEMPT FROM DISCLOSURE.**—With respect to research, development, demonstration, or commercialization projects carried out with the participation of private research institutions or commercial companies, information received by the Center incident thereto shall be exempt from disclosure under section 552 of title 5, United States Code, and shall not be made available publicly except—

(1) with the approval of the person providing the information; or

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(2) in a judicial or administrative proceeding in which such information is subject to protective order.

(e) **OVERHEAD AND ADMINISTRATIVE COSTS.**—The Board shall require that applications or responses to requests for proposals issued by the Center for grants, contracts, or cooperative agreements include detailed estimates of project overhead and administrative costs. In selecting such applications or proposals for awards, the Center shall give preference to those with the lowest effective costs.

(f) **PROHIBITION ON CERTAIN USES OF ASSISTANCE.**—No grant may be awarded, or contract or cooperative agreement entered into under this subtitle, for the acquisition or construction of a building or a facility.

(g) **REPORTS.**—

(1) **PREPARATION.**—As soon as practicable after the end of each fiscal year, the Board shall prepare and submit to the Secretary a report on the activities, progress, and accomplishments of the Center during such fiscal year. The report shall include—

(A) a description of the progress, activities, and accomplishments of the Center during that fiscal year and the expenditures by the Center for its information and other service activities; and

(B) a copy of the operating plan prepared by the Board under section 1659(c)(6).

(2) **TRANSMITTAL.**—The Secretary shall transmit each report received under paragraph (1) to the President and Congress not later than 30 days after the date on which the Secretary receives the report.

SEC. 1663. REGIONAL CENTERS.

(a) **ESTABLISHMENT.**—

(1) **REQUIRED.**—Except as provided in paragraph (2), the Board shall establish not less than two nor more than six Regional Centers to carry out the activities specified in this section and such other activities as the Board shall from time to time specify.

(2) **EXCEPTION.**—A Regional Center may not be established or operated in a fiscal year unless at least \$5,000,000 has been appropriated for that fiscal year to carry out this subtitle.

(b) **METHOD OF ESTABLISHMENT.**—

(1) **REGIONAL BASIS.**—Each Regional Center established under this section shall be located at a host institution. The Regional Centers shall be established in different States to reflect the different regional climatic conditions and rural economic stresses in the United States.

(2) **COMPETITION.**—An organization that desires to be selected as a host institution for a Regional Center shall submit an application to the Board. The Board shall determine the location of the Regional Centers based on a competitive review of the contents of such applications and shall consider the ability of the applicant to carry out the activities specified in this section.

(c) **MATCHING OF FUNDS.**—

(1) **ASSURANCES OF APPLICANTS.**—Each institution submitting an application for a Regional Center under this section shall provide assurances—

(A) that adequate funds or in-kind support (including office space, equipment and staff support) shall be provided to match the amount of funds used for administrative costs that are provided by the Federal Government under this subtitle; (B) that the institution is qualified to carry out the activities required of a Regional

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Center; and (C) concerning such other matters as the Board determines to be appropriate.

(2) **CONSORTIUM.**—The matching funds required under paragraph (1) may be provided by a consortia that may include the host institution and other public or private entities existing within various regions of the United States, including State and local governments, entities created by State and local governments, charitable organizations, public and private universities and other institutions of higher education, co-operatives, and economic development organizations.

(d) **DIRECTOR.**—Each Regional Center shall be headed by a full-time Regional Director who shall—

(1) be selected by the Board; and

(2) have a scientific or engineering background or have experience in the development of new products or processes in the public or private sector.

(e) **ACTIVITIES.**—Each Regional Center shall—

(1) encourage interaction among the private and Federal laboratories, National Science Foundation centers, Department of Agriculture research programs, other Federal resources, State and local regional economic development programs, universities, colleges, the private sector, and the financial community, for the purpose of evaluating and commercializing new nonfood, nonfeed uses of agricultural commodities;

(2) identify broad areas where commercialization of new nonfood, nonfeed products and processes can contribute to economic growth in rural areas of the United States, through the development of new nonfood, nonfeed uses for agricultural commodities by private companies and businesses;

(3) provide technical assistance and related business and financial counseling for small domestic businesses to commercialize new nonfood, nonfeed uses of agricultural commodities;

(4) identify new nonfood, nonfeed products and processes that are worthy of financial assistance;

(5) make use of existing programs in scientific, engineering, technical, and management education that will support the accelerated commercialization of new nonfood, nonfeed products and processes using agricultural commodities;

(6) advise the Board on the viability of specific applications submitted for financial assistance and on the type of assistance, if any, to be provided;

(7) coordinate their activities with the Small Business Development Centers; and

(8) coordinate their activities with the Center.

(f) **REVIEW OF PROPOSALS FOR ASSISTANCE.**—

(1) **SUBMISSION TO REGIONAL CENTER.**—If a Regional Center is established that includes the area in which a person applying for assistance under this subtitle is located, that person shall submit the application to the Regional Center for review.

(2) **REVIEW.**—The Directors of the Regional Centers shall work in consultation with the Advisory Council appointed under section 1661(c) to obtain peer review and evaluation of applications submitted to the Regional Centers.

(3) **ROLE OF ADVISORY COUNCIL.**—The Advisory Council shall review applications submitted to the Regional Centers. The Advisory

Council shall, by majority vote, make a nonbinding recommendation on each proposal to the appropriate Regional Director.

(4) *RECOMMENDATION.*—The Regional Director, after consideration of the Advisory Council's recommendation and based on the comments of the reviewers, shall make and submit a recommendation to the Board along with the recommendation of the Advisory Council. A recommendation submitted by a Regional Director or the Advisory Council shall not be binding on the Board.

SEC. 1664. ALTERNATIVE AGRICULTURAL RESEARCH AND COMMERCIALIZATION REVOLVING FUND.

(a) *ESTABLISHMENT.*—There is established in the Treasury of the United States a revolving fund to be known as the Alternative Agricultural Research and Commercialization Revolving Fund. The Fund shall be available to the Center, without fiscal year limitation, to carry out the authorized programs and activities of the Center under this subtitle.

(b) *CONTENTS OF FUND.*—There shall be deposited in the Fund—

(1) such amounts as may be appropriated or transferred to support the programs and activities of the Center;

(2) payments received from any source for products, services, or property furnished in connection with the activities of the Center;

(3) fees and royalties collected by the Center from licensing or other arrangements relating to commercialization of products developed through projects funded in whole or part by grants, contracts, or cooperative agreements executed by the Center;

(4) donations or contributions accepted by the Center to support authorized programs and activities; and

(5) any other funds acquired by the Center.

(c) *FUNDING ALLOCATIONS.*—Funding of projects and activities under this subtitle shall be subject to the following restrictions:

(1) Of the total amount of funds made available for a fiscal year under this subtitle—

(A) not more than 5 percent may be set aside to be used for authorized administrative expenses of the Center in carrying out its functions;

(B) not more than 5 percent may be set aside to be used for information collection and dissemination and technology transfer programs authorized in this subtitle; and

(C) not less than 85 percent shall be set aside to be awarded to qualified applicants who file project applications with, or respond to requests for proposals from, the Center under sections 1660 and 1661.

(2) Any funds remaining uncommitted at the end of a fiscal year shall be credited to the Fund and added to the total program funds available to the Center for the next fiscal year.

(d) *TERMINATION OF THE FUND.*—On expiration of the provisions of this subtitle, all assets (after payment of all outstanding obligations) of the Fund shall revert to the general fund of the Treasury.

(e) *AUTHORIZATION OF APPROPRIATIONS.*—There are authorized to be appropriated to the Fund—

(1) \$10,000,000 for fiscal year 1991;

(2) \$20,000,000 for fiscal year 1992;

(3) \$30,000,000 for fiscal year 1993;

(4) \$50,000,000 for fiscal year 1994; and

(5) \$75,000,000 for each of the fiscal years 1995 through 2000.

Subtitle H—Miscellaneous Research Provisions

SEC. 1668. BIOTECHNOLOGY RISK ASSESSMENT RESEARCH.

(a) **PURPOSE.**—It is the purpose of this section to—

- (1) authorize and support environmental assessment research to the extent necessary to help address general concerns about environmental effects of biotechnology; and
- (2) authorize research to help regulators develop policies, as soon as practicable, concerning the introduction into the environment of such technology.

(b) **GRANT PROGRAM.**—The Secretary of Agriculture shall establish a grant program within the Cooperative State Research Service and the Agricultural Research Service to provide the necessary funding for environmental assessment research concerning the introduction of genetically engineered organisms into the environment.

(c) **TYPES OF RESEARCH.**—Types of research for which grants may be made under this section shall include the following:

- (1) Research designed to develop methods to physically and biologically contain genetically engineered animals, plants, and microorganisms once they are introduced into the environment.
- (2) Research designed to develop methods to monitor the dispersal of genetically engineered animals, plants, and microorganisms.
- (3) Research designed to further existing knowledge with respect to the rates and methods of gene transfer that may occur between genetically engineered organisms and related wild and agricultural organisms.

(4) Other areas of research designed to further the purposes of this section.

(d) **ELIGIBILITY REQUIREMENTS.**—Grants under this section shall be—

- (1) made on the basis of the quality of the proposed research project; and
- (2) available to any public or private research or educational institution or organization.

(e) **CONSULTATION.**—In considering specific areas of research for funding under this section, the Secretary of Agriculture shall consult with the Administrator of the Animal and Plant Health Inspection Service, the Office of Agricultural Biotechnology, and the Agricultural Biotechnology Research Advisory Committee.

(f) **PROGRAM COORDINATION.**—The Secretary of Agriculture shall coordinate research funded under this section with the Office of Research and Development of the Environmental Protection Agency in order to avoid duplication of research activities.

(g) **AUTHORIZATION OF APPROPRIATIONS.**—

(1) **IN GENERAL.**—There are authorized to be appropriated such sums as necessary to carry out this section.

(2) **WITHHOLDINGS FROM BIOTECHNOLOGY OUTLAYS.**—The Secretary of Agriculture shall withhold from outlays of the Department of Agriculture for research on biotechnology, as defined and determined by the Secretary, at least one percent of such amount for the purpose of making grants under this section for research on biotechnology risk assessment.

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pensation act, including the state workmen's compensation self-insurance fund as provided in K.S.A. 44-575 through 44-580 and amendments thereto, the state health care benefits program and remittances pursuant to the federal social security act, federal insurance compensation act and the federal internal revenue code. The president and all other employees of Kansas, Inc. shall be considered to be state employees and Kansas, Inc. shall be considered to be a state agency only for the purposes specified in this subsection.

(b) Except as provided in subsection (b) of K.S.A. 1986 Supp. 74-8003 and amendments thereto for members of Kansas, Inc., the provisions of article 32 of chapter 75 of the Kansas Statutes Annotated, any acts amendatory thereof or supplemental thereto, and any rules and regulations adopted thereunder, shall not apply to officers or employees of Kansas, Inc. Subject to policies established by Kansas, Inc., the president of Kansas, Inc. or the president's designee shall be authorized to approve all travel and travel expenses of such officers and employees.

(c) Nothing in this act or the act of which it is amendatory shall be construed as placing any officer or employee of Kansas, Inc. in the classified service or unclassified service under the Kansas civil service act.

History: L. 1987, ch. 317, § 2; April 30.

74-3013. Moneys of Kansas, Inc.; disposition. (a) All state appropriations to or grants of state appropriations to Kansas, Inc. shall remain in the state treasury until expended or transferred to other state agencies pursuant to the Kansas, Inc. act.

(b) Except as provided in subsection (a), all moneys received by Kansas, Inc. from gifts, donations, grants or any other source outside the state treasury may be placed in the state treasury or may be maintained in interest-bearing accounts in Kansas banks or Kansas savings and loan associations until expended or otherwise disposed of pursuant to the Kansas, Inc. act.

History: L. 1987, ch. 317, § 3; April 30.

74-3014. Citation of act. K.S.A. 1987 Supp. 74-8001 through 74-8014 and any amendments thereto shall be known and may be cited as the Kansas, Inc. act.

History: L. 1987, ch. 317, § 1; April 30.

74-3015. Reports of community and economic development grants or loans. (a) As

used in this section "state agency" means any state office or officer, department, board, commission, institution, bureau or any agency, division or unit within any office, department, board, commission or other state authority or any person requesting a state appropriation.

(b) On October 1, 1990, and annually thereafter, state agencies making community and economic development grants or loans shall submit to Kansas, Inc. in a form prescribed by Kansas, Inc., reports detailing community and economic development grants or loans made by such state agencies. Such reports shall include the identity of the recipient of such loans or grants. Kansas, Inc., shall provide annually, to the governor and the legislature, a compilation of such reports.

History: L. 1990, ch. 294, § 1; July 1.

Article 81.—KANSAS TECHNOLOGY ENTERPRISE CORPORATION

Cross References to Related Sections:

Legislative standing and joint committees on economic development, see 46-1801 et seq.

Department of commerce, see ch. 74, art. 50.

Kansas, Inc., see ch. 74, art. 50.

Kansas Venture Capital, Inc., see ch. 74, art. 83.

Kansas statewide risk capital system, see ch. 74, art. 82.

Statewide planning and research, see ch. 75, art. 48.

Research and development activities tax credit, see 79-32,182.

Law Review and Bar Journal References:

"Private Financing For Small Businesses," Charles D. Lee, 58 J.K.B.A. No. 9, 15 (1989).

74-3101. Creation; board of directors, qualifications, terms, compensation and expenses; meetings; transaction of business; executive committee, establishment, composition, duties. (a) There is hereby created a body politic and corporate to be known as the Kansas technology enterprise corporation. The Kansas technology enterprise corporation is hereby constituted a public instrumentality and the exercise of the authority and powers conferred by this act shall be deemed and held to be the performance of an essential governmental function.

(b) The corporation shall be governed by a board of 15 directors who shall be residents of this state. The board shall consist of the governor or, at the discretion of the governor, the secretary of the department of commerce, four directors who are members of the legislature appointed as provided in subsection (d), and 10 directors appointed by the governor subject to senate confirmation as provided in K.S.A. 75-4315b, and amendments thereto.

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(c) (1) All ten of the directors appointed by the governor shall be persons recognized for outstanding knowledge and leadership in their fields. Six of the directors shall be persons from the private sector and four of the directors shall be engineers or scientists who have extensive experience in managing basic or applied scientific and technological research at Kansas educational institutions. Of the six directors appointed from the private sector:

(A) Four directors shall be persons who represent industries of the Kansas economy including small enterprises which include, but are not limited to:

(i) Resource-based industries of agriculture, oil and gas;

(ii) advanced technology industries of aviation, manufacturing, information and design and

(iii) emerging industries of telecommunications, computer software, information services and research services; and

(B) two directors shall be persons who represent the private financial sector of whom one shall have experience in the area of high-risk venture investments, and the other shall have commercial banking experience in an industry of special technological importance to the Kansas economy.

(2) In making appointments to the board, the governor shall give consideration to the qualifications of the persons who served as commissioners of the Kansas advanced technology commission and shall give consideration to appropriate geographical representation.

(3) Two directors shall be appointed for a term of one year, two directors shall be appointed for terms of two years, three directors shall be appointed for terms of three years and three directors shall be appointed for terms of four years. Successors to such directors shall be appointed for terms of four years. Each director shall hold office for the term of appointment and until the successor shall have been appointed and confirmed. In the event of a vacancy, the vacancy shall be filled by the governor in the manner provided for original appointments for the remainder of the unexpired portion of the term.

(d) Four directors shall be members of the legislature as follows: The speaker of the house, the house minority leader, the president of the senate, and the senate minority leader, or legislators who are appointed to represent them and who will provide continuity by virtue of their membership on the house or senate com-

mittees on economic development or the joint committee on economic development. Legislative officers designated in this subsection shall serve by virtue of office. Legislators appointed under this subsection shall serve from the dates of their appointment until the first day of the regular legislative session in odd-numbered years and are eligible for reappointment.

(e) Members of the board of directors, in their dealings with enterprises that may receive financing through the corporation, shall declare any potential conflict of interest and abstain from voting prior to taking any actions relating to that transaction.

(f) The board of directors shall conduct a national search and select a corporate president who meets a national standard of experience, ability and initiative for similar positions. The corporate president shall not be a member of the board.

(g) The board of directors shall hold all board meetings within the state of Kansas.

(h) Members of the board of directors are entitled to compensation and expenses as provided in K.S.A. 75-3223, and amendments thereto.

(i) The board shall annually elect from the private sector membership one member as chairperson and one member as vice-chairperson.

(j) The board of directors shall meet at least once during each calendar quarter, and at such other times as may be provided in the rules of the corporation, upon call by the president, the chairperson or upon written request of a majority of the directors.

(k) A majority of the board of directors shall be necessary to transact corporation business, and all actions of the directors shall be by a majority vote of the full number of corporate directors.

(l) The directors shall establish an executive committee composed of the chairperson, vice-chairperson and three additional members chosen by the chairperson from among the remaining directors. The executive committee, in intervals between board meetings, may transact any board business that has been delegated to the executive committee. A majority of the executive committee shall be necessary to transact business and all actions of the executive committee shall be by a majority vote of the committee.

(m) No member of the board of directors is eligible to serve more than two terms of office.

(n) A member appointed to the board of directors by the governor may be removed by the governor for cause, stated in writing, after a hearing thereon.

History: L. 1986, ch. 284, § 4; Jan. 12, 1987.

Attorney General's Opinions:

Directors of Kansas technology enterprise corporation are covered by Kansas tort claims act. 86-155.

74-8102. Purpose; ways of achieving. (a) The purpose of the Kansas technology enterprise corporation is to foster innovation in existing and developing businesses, especially the creation, growth and expansion of Kansas enterprises in a diversified range of primary sectors, which develop value-added products, processes and services including, but not limited to:

(1) Existing resource-based industries of agriculture, oil, gas, coal and helium;

(2) existing advanced technology industries of aviation, pharmaceuticals, computers and electronics; and

(3) emerging industries of telecommunications, computer software, information services and research services.

(b) The corporation shall achieve the purpose stated in subsection (a) of this section by:

(1) Financing basic research, applied research and development, and technology transfer at Kansas educational institutions which meet competitive standards of excellence as measured by national and international peers, and which create innovative collaboration between Kansas educational institutions and Kansas enterprises;

(2) awarding applied research matching grants to Kansas educational institutions and Kansas private enterprises in order to move innovation and applied research toward commercial application;

(3) engaging in seed-capital financing for the development and implementation of innovations or new technologies for existing resource, technology-based and emerging Kansas businesses; and

(4) providing technical referral services to such small, new, emerging or mature businesses and encouraging Kansas educational institutions to establish technical information data bases and industrial liaison offices which

are easily accessible by both private and public sector Kansas organizations.

History: L. 1986, ch. 284, § 1; Jan. 12, 1987.

74-8103. Definitions. As used in this act:

(a) "Applied research" means those research activities occurring at educational institutions and in private enterprises, which have potential commercial application;

(b) "basic research" means research that has long range generic value to an industry classification or group of companies. Basic research is distinguished from applied research which has more short range present value to a single company or project;

(c) "corporation" means the Kansas technology enterprise corporation;

(d) "educational institutions" means Kansas college of technology, public and private community colleges, colleges and universities in the state;

(e) "enterprise" means a firm with its principal place of business in Kansas which is engaged or proposes to be engaged in this state in agricultural, natural resource-based or other manufacturing, research and development, or the provision of technology-based services;

(f) "new technology" means the development through science or research of methods, processes and procedures, including but not limited to those involving the utilization of agricultural products and by-products and oil and gas and other mineral resources for practical application in industrial and service situations;

(g) "person" means any individual, partnership, corporation or joint venture carrying on business or proposing to carry on business within the state;

(h) "product" means any product, device, technique or process, which is or may be developed or marketed commercially; however, "product" does not refer to basic research but shall apply to such products, devices, techniques or processes which have advanced beyond the theoretical stage and are in a prototype or practice stage;

(i) "qualified security" means any public or private financial arrangement, involving any note, security, debenture, evidence of indebtedness, certificate of interest or participation in any profit-sharing agreement, preorganization certificate or subscription, transferable security, investment contract, certificate of deposit for a security, certificate of interest or participation in a patent or application therefor,