

Approved February 4, 1992  
Date

MINUTES OF THE SENATE COMMITTEE ON AGRICULTURE

The meeting was called to order by Sen. Don Montgomery at  
Chairperson

10:00 a.m./~~p.m.~~ on January 31, 1992 in room 423-S of the Capitol.

All members were present except:

Senators Frahm, Francisco & Brady

Committee staff present:

Raney Gilliland, Legislative Research  
Shirley Higgins, Committee Secretary

Conferees appearing before the committee:

Gary Hall, Assistant Director, Kansas Board of Agriculture  
Steve Morris, Hugoton, Feedgrains Subcommittee  
John Jr. Armstrong, Muscotah, Wheat Subcommittee  
Dale Peterson, Clifton, Oilseeds  
Ron Meier, Topeka, Horticulture  
Chuck Munson, Junction City, Livestock  
Chuck Magathan, Cedar Point, Hay and Forage

The chairman called on Gary Hall, Assistant Director of Kansas Board of Agriculture, to begin a presentation on agricultural research needs in Kansas. Mr. Hall commented that he feels the efficiency in Kansas is excellent, however, research is still necessary to keep Kansas competitive in the future. He explained that nine subcommittees have met last year to: (1) identify research needs in Kansas, (2) determine how to address these needs, and (3) to formulate innovative financial mechanisms. He introduced Steve Morris, a farmer from Hugoton and a subcommittee chairman, to begin the presentation on Kansas agricultural research initiatives. (Attachment 1). Mr. Morris also introduced the subcommittee chairmen present at the meeting: John Jr. Armstrong, Dale Peterson, Ron Meier, Chuck Munson, and Chuck Magathan.

The report of each subcommittee chairman began with John Jr. Armstrong, Wheat subcommittee. (Attachment 2-4). His main emphasis was on the quality of flour which has gone down in Kansas in recent years. There is a need to do a better job in wheat breeding which is an ongoing process needed to develop new varieties of wheat and on which money should be spent.

Next to report was Steve Morris on Feedgrains. (Attachment 2-8). He feels that the present method of producing grain, hoping that someone would buy it, should be changed to producing grains for which there is a known demand.

Dale Peterson reported on Oil Seeds. (Attachment 2-12). His subcommittee has found that there is always more to learn. Of the three oilseeds, soybeans, canola and sunflower, soybeans have been the biggest boost to the economy in recent years. Kansas needs to change in order to progress and begin growing canola, large amounts of which are now being imported. With regard to programs with which Kansas can cooperate with other states as noted in the written testimony, Sen. Daniels asked Mr. Peterson what programs exist with which Kansas could cooperate. Mr. Peterson could not be specific but noted the main concern is that research is not duplicated.

Ron Meier, Horticulture, followed. (Attachment 2-15). He noted there are eleven specific areas in horticulture, but the biggest problem is that horticulture needs to identify itself with the State of Kansas and agriculture. He had no specific proposals as yet, but there will be in the future.

CONTINUATION SHEET

MINUTES OF THE SENATE COMMITTEE ON AGRICULTURE,  
room 423-S, Statehouse, at 10:00 a.m./~~p.m.~~ on January 31, 1992.

Chuck Munson addressed Livestock and Meat Processing. (Attachment 2-18 & 2-22). He emphasized four areas the Livestock subcommittee considered: (1) marketing at a profit, (2) environmental concerns, (3) animal welfare issues and (4) product quality and safety.

Chuck Magathan concluded the reports with his comments on Hay and Forage. (Attachment 2-32). This committee's main concern is with the bio-mass research process. It is important that forage is better utilized and a better way to publicize the research information is needed.

Sen. Daniels asked Mr. Morris if the subcommittees have developed an estimated cost for research and what the top priorities would be. Mr. Morris answered that this process has been started but has not been completed. Sen. Daniels stated that she feels this would be helpful information in these times of tight budgets.

Sen. Webb invited the subcommittee chairmen to accompany him Saturday, February 8, as he shows visiting Russians farm operations in Miami County.

The minutes of January 29 were approved.

The meeting was adjourned at 11:00 a.m.



**PRESENTATION**

Presented to

**SENATE COMMITTEE ON AGRICULTURE**

re.

**KANSAS AGRICULTURAL RESEARCH INITIATIVES**

**REPORT**

January 31, 1992

*Senate Agriculture  
1-31-92  
Attachment 1*

## AGRICULTURAL RESEARCH INITIATIVES INDUSTRY GROUPS, CHAIRS, MEMBERS, AND STAFF

### WHEAT

JOHN JR. ARMSTRONG, FARMER/STOCKMAN,  
MUSCOTAH, KS  
Joe Jagger, Farmer/Stockman,  
Minneapolis, KS  
Art Armbrust, Co-Owner, Sharp Bros. Seed,  
Healy, KS  
Adrian Polansky, Farmer/Certified Seed Dealer,  
Belleville, KS  
Steven Graham, Kansas Wheat Commission,  
Manhattan, KS

### FEEDGRAINS

STEVE MORRIS, FARMER/STOCKMAN,  
HUGOTON, KS  
Jeff Casten, Farmer/Stockman,  
Quenemo, KS  
Larry Dahlsten, Farmer/Stockman,  
Lindsborg, KS  
Bob Edwards, Farmer/Stockman,  
Olsburg, KS  
Allen Hurley, Farmer/Stockman,  
Republic, KS  
Galen Swenson, Kansas Board of Agriculture,  
Topeka, KS

### OILSEEDS

DALE PETERSON, FARMER/STOCKMAN,  
CLIFTON, KS  
Elmer Davis, Farmer/Stockman,  
Haviland, KS  
Alan States, Farmer/Banker,  
Logan, KS  
Charles Hamon, Farmer/Certified Seed Dealer,  
Valley Falls, KS  
Galen Swenson, Kansas Board of Agriculture,  
Topeka, KS

### HORTICULTURE

RON MEIER, MEIER PRODUCE,  
TOPEKA, KS  
Carl Meyer, Horticulture Services,  
St. George, KS  
Dick Stuntz, Alvamar Golf and Country Club,  
Lawrence, KS  
Nick Steffen, Orchard Owner,  
Conway Springs, KS  
Loreen Locke McMillan, Kansas Board of Agriculture,  
Topeka, KS

### MEAT PROCESSING

DEL ALLEN, EXCEL INC.,  
WICHITA, KS  
Bob Danler, Flint Hills Foods Inc.,  
Alma, KS  
Scott Goltry, Ohse Meats Inc.,  
Topeka, KS  
Dean Danielson, IBP Inc.,

### LIVESTOCK

CHUCK MUNSON, STOCKMAN,  
JUNCTION CITY, KS  
Arlen Dettmer, Stockman,  
Alta Vista, KS  
Mike Currie, Dairy Owner,  
Gypsum, KS  
Ken Goodyear, Stockman,  
Dwight, KS  
Jerry Dudley, Kansas Board of Agriculture,  
Topeka, KS

### WHEAT PROCESSING

PAT THIESSEN, CARGILL MILLING,  
WICHITA, KS  
Henry Solle, Continental Baking Co.,  
St. Louis, MO  
Mark Stearns, Campbell-Taggart Inc.,  
Dallas, TX  
Jerry Lassiter, Midwest Grain Products,  
Atchison, KS  
James Allen, McShares Inc.,  
Salina, KS  
Greg Frazier, Staff Director, U.S. House Subcommittee on  
Wheat, Soybeans, and Feedgrains,  
Washington, DC  
Steven Graham, Kansas Wheat Commission,  
Manhattan, KS

### HAY and FORAGE

CHUCK MAGATHAN, STOCKMAN,  
CEDAR POINT, KS  
Carlton Bert, Bert-Wetta Processors,  
Larned, KS  
Charlie Moore, Producer,  
Modoc, KS  
Rich Porter, Stockman,  
Reading, KS  
Kenneth Boughton, Kansas Board of Agriculture,  
Topeka, KS

### AGRI-BUSINESS

CHUCK JOHNSON, JOHNSON ELEVATORS,  
MENTOR, KS  
Roger Wolfe, White Cloud Grain,  
Hiawatha, KS  
Bill Armfield, Kansas Crop Service Inc.,  
Whitewater, KS  
Tom Lutgen, Star Seed Company,  
Osborne, KS



## WHEAT

THE STATE NEEDS TO INCREASE THE EFFORTS IN WHEAT BREEDING AND BIOTECHNOLOGY.

THE STATE SHOULD RESUME ITS FUNDING OF THE BREEDING AND END-USE PROGRAMS FOR HARD WHITE WINTER WHEAT.

THE STATE SHOULD FUND RESEARCH AT K-STATE TO DETERMINE NEW REWARD SYSTEMS TO PROVIDE FINANCIAL INCENTIVES ENTICING GROWERS TO PRODUCE WHEAT WITH ENHANCED MILLING AND BAKING QUALITY.

## FEEDGRAINS

WATER QUALITY ISSUES RELATIVE TO FEEDGRAIN PRODUCTION SHOULD INCLUDE THE ESTABLISHMENT OF A SANDY LAND IRRIGATION SITE FOR SPECIFIC-NEED RESEARCH. COMPARATIVE ANALYSES SHOULD BE MADE INCLUDING DRYLAND MANAGEMENT, FLOOD IRRIGATION VERSUS SURGE, DROP SYSTEMS, AND LEPA VERSUS LOW PRESSURE SYSTEMS. SUPPORT SHOULD BE REQUESTED FROM THE STATE WATER PLAN FOR THE STUDY OF SANDY LAND IRRIGATION EFFICIENCY, WITH MATCHING SUPPORT FROM PRIVATE IRRIGATION MANUFACTURERS.

CONSOLIDATION OF RESEARCH EFFORTS AMONG RESEARCH FIELDS IN THE STATE IS RECOMMENDED WITH CENTRALIZED MANAGEMENT OF STATE-SPONSORED RESEARCH. STRATEGIC PLANS SHOULD BE DEVELOPED FOR EACH OF THE STATE'S RESEARCH CENTERS, WITH EMPHASIS ON REGIONAL CLIMATIC, SOILS, AND ENVIRONMENTAL FACTORS.

BASIC RESEARCH AND DEVELOPMENT OF SCREENING TECHNIQUES FOR NEW MATERIALS IS SOUGHT BY COMMERCIAL INTERESTS WITH MATCHED SUPPORT BY THE PUBLIC SECTOR. MATCHING RESEARCH SUPPORT FROM TECHNOLOGY CORPORATIONS AND FEDERAL GRANTS TO MATCH EXISTING STATE APPROPRIATIONS IS SOUGHT.

## OILSEEDS

COOPERATIVE SOYBEAN TESTING WITH OTHER STATE PROGRAMS IS NEEDED IN AREAS OF CYST NEMATODE, BIOENGINEERING AND MOLECULAR DEVELOPMENT, INCLUDING REMOTE SENSING AND IMAGE ANALYSIS. COOPERATIVE STATE RESEARCH SUPPORT SHOULD BE DEVELOPED WITH THOSE STATES WITH EXPERTISE IN MINOR OILSEED RESEARCH DEVELOPMENT EFFORTS.

STATE SUPPORTED SOYBEAN RESEARCH PROGRAMS MUST RECOGNIZE PRODUCTION PROBLEMS AND ADAPT CHEMICAL CONTROL MECHANISMS TO MATCH NEEDS. VARIETY DEVELOPMENT, IRRIGATION MANAGEMENT, AND SOIL CHARACTERISTICS NEED SPECIFIC ATTENTION IN STATE PROGRAMMING.

HERBICIDE RECOMMENDATIONS ON CROP ROTATIONS OF OILSEEDS WITH OTHER TRADITIONAL CROPS NEED TO BE ESTABLISHED BY STATE RESEARCH CENTERS WITH EMPHASIS ON NO-TILL AND REDUCED-TILLAGE PRACTICES. CONSERVATION COMPLIANCE AND RESIDUE REQUIREMENTS OF NON-PROGRAM CROPS NEED TO BE ANALYZED BY STATE RESEARCH COMMUNITY.

ESTABLISHMENT OF A STATE CHECKOFF FOR MINOR OILSEEDS PRODUCED IN KANSAS IS ENCOURAGED, WITH FUNDS USED FOR RESEARCH AND DEVELOPMENT PROGRAMS OF RESPECTIVE COMMODITIES.

## HORTICULTURE

HORTICULTURE REQUIRES DIVERSIFIED RESEARCH INVOLVING ELEVEN SPECIALIZED COMMODITIES AND MANY SPECIFIC CROPS AND AN INDUSTRY INVOLVING BOTH FOOD QUALITY AND ENVIRONMENTAL CONCERNS.

INCOMPLETE INFORMATION EXISTS ON HORTICULTURE PRODUCTION TO THE KANSAS ECONOMY AS WELL AS THE VALUE OF THE INDUSTRY ON ENVIRONMENTAL PROTECTION AND ENHANCEMENT.

BECAUSE PRODUCTIVITY AND ENVIRONMENTAL PROTECTION DEPEND ON RESEARCH, AN ANALYSIS OF THE NUMBER OF KANSAS HORTICULTURE PRODUCERS AND EXTENT OF PRODUCTION IS NEEDED; THE MULTIPLIER EFFECT OF HORTICULTURE INDUSTRIES TO THE ECONOMY OF COMMUNITIES; THE VALUE AND ECONOMIC IMPACT OF HORTICULTURE INDUSTRIES; AND DEVELOPMENT OF A MEASURE OF THE INTANGIBLE BENEFITS OF HORTICULTURE TO THE CITIZENS AND STATE OF KANSAS, IN TERMS OF AESTHETICS, RECREATION, AND ENVIRONMENTAL PROTECTION IS RECOMMENDED.

## MEAT PROCESSING

A CONTINUING SERIES OF SEMINARS WITHIN KANSAS FOCUSING ON NEW INNOVATIONS IN MEAT PROCESSING SHOULD BE ESTABLISHED WITH ASSISTANCE PROVIDED BY THE KANSAS BOARD OF AGRICULTURE, KANSAS STATE UNIVERSITY, THE AMERICAN MEAT INSTITUTE, THE NATIONAL LIVESTOCK AND MEAT BOARD, AND THE AMERICAN ASSOCIATION OF MEAT PROCESSORS.

THE KANSAS VALUE ADDED CENTER SHOULD BE THE FOCAL POINT FOR THE FORMING OF CONSORTIUMS FOR CONDUCTING MEAT RESEARCH WITH FUNDING ARRANGEMENTS DEVELOPED WITH THE LIVESTOCK AND MEAT INDUSTRY COUNCIL. REPAYMENT SYSTEMS SHOULD BE DEVELOPED BY THE CONSORTIUM OF THOSE PROJECTS RESULTING IN PROFITABLE PRODUCTS OR PROCESSES.

THE ESTABLISHMENT OF A SYSTEM ALLOWING SMALL BUSINESS TO UTILIZE PUBLICLY OWNED RESEARCH FACILITIES FOR A USE-FEE IS RECOMMENDED. RESEARCH WOULD BE DIRECTED BY THE COMPANY LEASING THE FACILITY.

THE STATE SHOULD ESTABLISH A USDA ACCREDITED LABORATORY FOR MEAT PRODUCT TESTING BY UTILIZING AN EXISTING LABORATORY IN THE STATE TO ASSIST IN RECEIVING ACCREDITATION OR USING STATE SUPPORT TO ESTABLISH A SERVICE LABORATORY FOR USE BY THE SMALL MEAT PROCESSORS IN THE STATE. SUCH FACILITY SHOULD BE SELF-SUPPORTING IN FIVE TO SIX YEARS.

## LIVESTOCK

ENCOURAGE THE CONDUCTING OF RESEARCH IN AREAS OF ENVIRONMENTAL POLLUTION WITH REGARD TO LIVESTOCK PRODUCTION.

PROMOTE RESEARCH ON LOW-FAT RED MEATS, LEANER CHOICE CUTS, READY-TO-EAT FAST FOODS FOR HOME USE AND ADDITIONAL USES FOR BY-PRODUCTS.

MONITOR ALL ANIMAL RIGHTS ISSUES AND THOSE AREAS OF VIOLATION.

CONTINUE TO RESEARCH AREAS THAT WILL REDUCE REGULATIONS OF FOREIGN COUNTRIES WHICH INHIBIT THE SALE OF MEAT PRODUCTS, LIVE ANIMALS, EMBRYOS, AND SEMEN.

INCREASE RESEARCH PROGRAMS WHICH ENHANCE THE EDUCATION OF FOREIGN AND DOMESTIC BUYERS REGARDING ISSUES SUCH AS MEAT QUALITY, PRODUCT SAFETY, PRODUCTION METHODS, PRODUCT UTILIZATION, AND SUPPLYING MARKET DEMANDS.

## WHEAT PROCESSING

THE STATE NEEDS TO FUND EARLY GENERATION QUALITY TESTING OF NEW WHEAT VARIETIES UNDER DEVELOPMENT AT KANSAS STATE UNIVERSITY BY EQUIPPING AND STAFFING A LABORATORY.

KANSAS STATE UNIVERSITY AND USDA SHOULD BE ENCOURAGED TO DEVELOP A RAPID TEST FOR QUALITY CHARACTERISTICS THAT CAN BE USED BY LOCAL ELEVATORS WHEN PURCHASING WHEAT FROM PRODUCERS. PRODUCERS COULD BE REWARDED FOR QUALITY.

BASIC RESEARCH IN THE AREA OF INSECT CONTROL IN STORED GRAINS NEEDS TO BE ENCOURAGED AND FUNDED.

## HAY & FORAGE

BIO-MASS RESEARCH ON FORAGE MATERIALS, ESPECIALLY THAT WHICH MAY BE GROWN ON CRP LANDS IS RECOMMENDED.

CONTINUE TO SUPPORT THE POSITION OF ALFALFA BREEDER AT KANSAS STATE UNIVERSITY.

RESEARCH IS NEEDED TO COMPARE ALFALFA PELLETS TO OTHER FEED SOURCES.

INVESTIGATE NEW ENERGY SOURCES FOR FORAGE PROCESSING PLANTS.

INVESTIGATE INTEGRATED FORAGE MANAGEMENT AND COMPLIMENTARY FORAGE SYSTEMS.

IMPROVE DISSEMINATION OF RESEARCH INFORMATION AND RESULTS.

COOPERATIVE REGIONAL OR MULTI-STATE PROJECTS, AS WELL AS COOPERATIVE RESEARCH OPPORTUNITIES WITH THE PRIVATE SECTOR IS SUGGESTED.

## AGRI-BUSINESS

REEVALUATE THE CURRENT STANDARDS FOR ALL GRAINS TO KEEP RELEVANT OF CURRENT AGRICULTURAL EFFORTS AND PLANT BREEDING TECHNIQUES. STUDY SHOULD BE MADE TO IMPROVE THE STORAGE OF GRAIN, SEED, AND FOOD PRODUCTS, RELATIVE TO CHEMICALS AND METHODS REQUIRED.

DEVELOPMENT OF A CLOSER ALLIANCE BETWEEN PRIVATE AND PUBLIC RESEARCH EFFORTS TO REDUCE DUPLICATION IS RECOMMENDED. A PROCESS WHERE PUBLIC RESEARCH EFFORTS MAY ADAPT PRIVATE RESEARCH FINDINGS IS SOUGHT. ACCOUNTABILITY OF RESEARCH EFFORTS MUST BE MAINTAINED THROUGH A FREQUENT EVALUATION PROCESS.

CONTINUE TO STUDY ALTERNATIVE USE FOR KANSAS GRAIN CROPS, SUCH AS VALUE-ADDED PRODUCTS, INCLUDING THE DEVELOPMENT OF A MARKETING APPROACH FOR SUCH CATEGORY.

STUDY AREAS OF ECOLOGICAL RESPONSIBILITY AND THE USE OF AGRICULTURAL CHEMICALS AND FERTILIZERS, INCLUDING APPLICATION, METHODS AND RATES. WATER USAGE RESEARCH INCLUDING MOST EFFICIENT IRRIGATION DELIVERY SYSTEMS, DRY LAND PRODUCTION METHODS, AND DROUGHT RESISTANT VARIETIES, SHOULD BE EXPANDED.

EDUCATION OF URBAN POPULATIONS ABOUT THE RELATIVE VALUE OF KANSAS AGRICULTURE TO QUALITY OF LIFE MUST BE ADDRESSED. RURAL RESOURCES MUST BE STUDIED TO HELP DEVELOP PLANS USING THOSE RESOURCES TO KEEP SMALL, RURAL COMMUNITIES ALIVE.



## A MESSAGE TO THE CITIZENS OF KANSAS

Agricultural production in Kansas amounts to \$6-7 billion annually, a figure that is increased about threefold by food processing and other value-added activities. Such tremendous productivity depends heavily on agricultural research.

Through the creation of nine industry support groups, an evaluation of agricultural initiatives was made. Each group selected representatives with specific commodity and or professional expertise which provided a needs and assessment review applicable to the future of their industry. The groups were charged with the following goals: 1.) to identify agricultural research requirements and industry needs for the next five years, 2.) to provide definite proposals and action to accomplish those identified needs, and 3.) to recommend a strategy for sources of funding to match those needs. Facilitation to our review was provided by agribusiness, consultants, the bio-technology sector, the Kansas Board of Agriculture, the Kansas Corn, Grain Sorghum, Soybean, and Wheat Commissions, and the research community.

The real strength of research programs in Kansas has been in support of production efficiency and profitability of crops and livestock. Modification of existing crops, or the development of new crops, requires additional research. Kansas has a wide variety of domestic animals, and each species needs special research attention. Information on genetic improvement of plants and animals; on safe and effective management of pests; on management of plant and animal environmental stresses; and on conservation and efficient use of water in plant and animal systems is needed. Continued research efforts on narrow profit margins, on environmental quality, on globalization of the marketplace, and on the impact of federal farm programs, must be maintained.

In a rapidly changing world, agricultural research must be on the cutting edge of scientific advances and in the forefront of development and application of new technology. First-rate research requires additional financial support. State and federal appropriations have failed to keep up with the costs of inflation and with the need for new projects and new equipment. Because of budget restrictions, research in Kansas has been focusing mainly on the most pressing needs of Kansas agriculture. A full complement of research programs that address all the problems of Kansas agriculture is needed. Kansas producers, consumers, and citizens will not benefit as much as they could from a fully supported public agricultural research program.

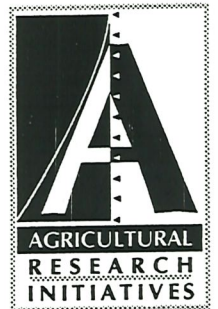
Thank you for your attention and consideration.

**John Jr. Armstrong,**  
Wheat  
**Steve Morris,**  
Feedgrains  
**Dale Peterson,**  
Oilseeds

**Ron Meier,**  
Horticulture  
**Del Allen,**  
Meat Processing  
**Chuck Munson,**  
Livestock

**Pat Thiessen,**  
Wheat Processing  
**Chuck Magathan,**  
Hay and Forage  
**Chuck Johnson,**  
Agri-Business

**Industry Committee Chairman Group**



Senate Agriculture  
1-31-92  
Attachment 2

**AGRICULTURAL RESEARCH INITIATIVES  
INDUSTRY GROUPS, CHAIRS, STAFF, AND MEMBERS**

**WHEAT**

JOHN JR. ARMSTRONG, FARMER/STOCKMAN,  
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Topeka, KS

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Scott Goltry, Ohse Meats Inc.,  
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Dean Danielson, IBP Inc.,  
Dakota City, NE



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**LIVESTOCK**

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Arlen Dettmer, Stockman,  
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Mark Stearns, Campbell-Taggart Inc.,  
Dallas, TX  
Jerry Lassiter, Midwest Grain Products,  
Atchison, KS  
James Allen, McShares Inc.,  
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CHUCK JOHNSON, JOHNSON ELEVATORS,  
MENTOR, KS  
Roger Wolfe, White Cloud Grain,  
Hiawatha, KS  
Bill Armfield, Kansas Crop Service Inc.,  
Whitewater, KS  
Tom Lutgen, Star Seed Company,  
Osborne, KS



## WHEAT

### INDUSTRY RESEARCH NEEDS RECOMMENDATIONS FUNDING STRATEGY

#### SUMMARY

Wheat is the most consumed food grain in the world. Kansas is the number one wheat producing state in the U.S. Kansas weather is well suited to producing a high quality product.

There are concerns, however, that the Kansas wheat crop is failing to meet increasing demands of modern day processors and end users. A continued decline in the ability of the crop to meet such needs eventually will force wheat users to satisfy their needs using alternative sources. A strong Kansas wheat base must be established to compete both in the U.S. and worldwide.

To establish this strong base, increased funding of research, strengthening of the Plant Variety Protection Act, new ways of measuring milling and end use quality of wheat at first delivery points, and new methods of marketing wheat which will reward producers for growing wheat with the desired milling and end use qualities are needed.



#### INDUSTRY RESEARCH NEEDS

- The loss of private wheat breeders is a concern to wheat producers. Presentations by public and private wheat breeders underscore the difficulty of producing varieties or hybrids as a private company. The load is placed on state agricultural universities, programs which are understaffed and underfunded. For growers, one wheat breeding program with five breeders is not as effective as five properly funded programs.
- Producers need to support tightening of the Plant Variety Protection Act and of the Kansas seed law. The Kansas seed industry has agreed to registration fees both at the wholesale and retail levels to support enforcement of the state seed law. As passed by the state legislature, the aim of the Kansas seed law is to protect seed consumers, not seed sellers.
- New ways of marketing wheat need to be found so quality can be measured at the country elevator and so producers can be rewarded for growing milling quality and baking quality wheats. Needs exist to isolate wheat as a food grain versus a feedgrain.

- Concerns from millers and bakers regarding the performance of the Kansas crop are justified. Growers need to be given an indication of the milling and baking quality of new or old varieties.
- Research is needed to grow, to change, and to meet U.S. and international industry needs.

## RECOMMENDATIONS

- The Kansas Secretary of Agriculture should appoint a committee comprised of breeders, researchers, growers, and industry to act as a forum to consider agricultural research efforts. An annual report should be made by the committee to the secretary reporting on the progress of current research projects, research goals, and funding levels needed. The secretary should use the annual report as an important and impartial source of information in communicating with the state legislature, the congress, and the general public.
- The seed law should be strictly enforced in Kansas and the wheat industry should encourage stronger support of the Plant Variety Protection Act. The Kansas seed industry has agreed to registration fees both at the wholesale and retail levels to support the enforcement of the state seed law. The Kansas seed law's aim is to protect consumers, not sellers of seed, as passed by the state legislature.

This would encourage private seed companies to re-enter the breeding arena, thus increasing the amount of quality varieties and money spent from the private sector on wheat breeding.

- The State of Kansas should increase funding of early generation quality testing of new wheat varieties under development at Kansas State University. Producers and processors should encourage early generation quality testing of new varieties.
- The State of Kansas should fund the hiring of a molecular geneticist to work at KSU and an assistant wheat breeder for the Hays Experiment Station; also funded should be necessary technicians and equipment.
- The Wheat Genetics Resource Center at KSU has been receiving federal funding crucial to staffing and research. The third year of federal funding will be \$159,000; such funding is expected for two additional years. KSU and the Board of Regents need to prepare for the addition of funding to the Kansas Agricultural Experiment Station budget in FY95. The WGRC is working in conjunction with other universities and research laboratories to map the genome of wheat and biotechnology potentials as they relate to wheat production and quality.
- The State of Kansas should resume its funding of the breeding and end-use programs for hard white winter wheat (HWW). Money for this research came to KSU the past four years through programs of the Kansas Technology Enterprise Corporation (KTEC). HWW is developing into an alternative crop for Kansas wheat producers. It has unique properties for the milling and baking and other end-use industries, and it also provides an identity preserved growing system based on quality.
- The State of Kansas should fund research at KSU to determine new reward systems to provide financial incentives enticing growers to produce wheat with enhanced milling and baking



quality. Such would keep wheat as a food grain versus a feedgrain. Such research would help establish an incentives based marketing system and would help encourage the development of identity preserved marketing programs, and market specialty wheats for various end users.

- KSU and the Wheat Quality Council should develop a list of varieties with milling and baking properties for each of the nine crop reporting districts in the state. The list, updated yearly, could be released to wheat producers by extension and other means.
- The wheat industry should encourage the federal government to increase its funding of the USDA Grain Marketing Research Laboratory in Manhattan. An increased investment of \$1.25 million beginning in 1993 will allow initiation of an expanded effort to solve many current grain quality problems faced by the industry. The lab is performing wheat quality work and is developing new equipment, but needs enhanced funding. To meet modern codes, the lab also needs facility repair and renovation totalling \$1.7 million.
- The Federal Grain Inspection Service should cooperate with USDA-ARS, KSU, and other organizations to develop and implement an end-use and quality oriented system of grading using objective—instead of subjective—tests. Equipment could be used by elevator operators per type of wheat received.
- The wheat industry should encourage USDA-ARS to continue protein research at its various labs, including Manhattan, so rapid functional performance tests can be developed.
- Basic insect control research needs continued encouragement and enhanced funding.
- Producers should review the list sent to KSU extension offices of milling and baking quality rankings of Kansas wheat varieties and hybrids.
  - An incentive must come from the marketing system to the producer to make exceptional wheat varieties worthwhile.
- Grain elevators or identity preserved companies should segregate by variety or variety groups until quick, quality tests can be developed. Millers and bakers must be encouraged to pay for the extra quality to make the effort worthwhile.



## FUNDING STRATEGY

- Enforce the Plant Variety Protection Act, and private breeders will return to our region with research support.
  - Incentives must come from millers and bakers.
- The state needs to increase funding in the wheat area if Kansas wants to remain in the lead.
  - The federal government needs to invest in work at the USDA Grain Marketing Research Laboratory.
- Growers are now funding many of the projects through a voluntary checkoff; a program which should continue.

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## FEEDGRAINS

### INDUSTRY RESEARCH NEEDS RECOMMENDATIONS FUNDING STRATEGY

Through investigations with producers, researchers, consultants, commercial suppliers, and representatives, an evaluation of needs and trends were categorized relative to the feedgrain sector in Kansas, and the corresponding research needs are recommended to assist the future of the industry in the state.

Industry research needs are listed in order of type rather than by priority. Recommendations for action and funding strategy follow.

### INDUSTRY RESEARCH NEEDS SORGHUM

- Cream colored or yellow endosperm variety development is recommended, allowing a greater consistent supply of the product as sought by the feeding industry. Weathering abilities of yellow endosperm sorghums should be developed.
- Sorghum seed coat characteristics through breed development is recommended to allow greater usage in livestock feed processing.
  - Instrumentation for hardness testing of sorghum needs to be developed, including a genetic marker for protein testing.
  - Expedition of sorghum germplasm lines resistant to new biotypes of greenbug populations is sought for timely adaptation into hybrid line release.
- State sorghum research programs need to be enhanced with specific equipment and technology to maximize results to include refrigerated centrifuges, NIR analysis equipment, and plot harvesting equipment.
- With emphasis on regional climatic, soil, and environmental factors, strategic plans for sorghum research should be developed in state for each research center.
- Higher yielding sorghums should be sought by public and private breeders to encourage production in water deficient areas of the state.





## CORN

- Study of ridge till, LEPA, surge irrigation technology, and water quality effects on long-term corn production is recommended.
  - Steam flaked processing versus high moisture and dry rolled formulations need comparative analysis in terms of energy pricing and nutritional effects.
  - Protein testing for corn from varying soil types is needed to address variances in processing.
- Cooperative efforts with regional institutions in genetic engineering should be sought in designing corn plants with desirable genes for Kansas.
- Improved screening techniques of genotypes to identify genes best suited to Kansas is recommended.

## RECOMMENDATIONS

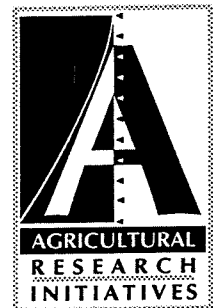
- Comprehensive regional extension system recommendations, in areas of fertility and crop protection management, need to be established.
- Harvesting techniques of new varieties should be expanded for producer availability.
- Cropping alternatives and chemical control usage needs to be enhanced providing economic benefit to producers.
- Barley should be further tested as a feedgrain, with data made available when cropping patterns make such alternative feasible. In addition, supporting data on wheat and triticale as feedgrains should be made available to all production areas of the state.
  - Specific variety development to meet the needs of specific industries should be sought through long-term plant improvement.
  - Water quality issues relative to feedgrain production should include the establishment of a sandy land irrigation site for specific-need research. Comparative analyses should be made including dryland transition management, flood irrigation versus surge, drip systems, and LEPA versus low pressure systems.
  - Publicly supported studies should be continued in the areas of plant breeding, biological control, and harvesting techniques.
  - Assistance is needed to expedite the time and regulation process of germplasm for screening with resistance to new biotypes of pest infestations.
- Private research cooperation with state research programming is recommended in areas of basic research.
- The American seed trade association and the farmer exemption to the plant variety protection act is supported relative to its effect on continued research development for improved technology and varieties.
  - Securing publicly trained students with compatible private interests is recommended to adapt research into practical use areas.
- Multi-disciplinary approaches to disease and insect control are recommended for private and public feedgrain research.
- Cooperation with regional expertise in poultry nutritional expertise, relative to feedgrain ration and utilization, is recommended.



- Consolidation of research efforts among research fields in the state is recommended.
  - Centralized management of state-sponsored research is encouraged.
- State research and the extension community should be encouraged to pursue specialized agricultural areas of study for greater delivery to production areas.
  - Strategic plans should be developed for each of the state's research centers, with emphasis on regional climatic, soils, and environmental factors.
  - Greater cooperation among public breeders in other state research programs should be established.
- Management of private fund raising for research support needs to be improved, with commercial interests with consistent policies developed.

## FUNDING STRATEGY

- Basic research and development of screening techniques for new materials is sought by commercial interests with matched support by the public sector.
  - Support from private research entities is encouraged to allow basic plant breeding programs at state-supported institutes for the training of students and for adaptation into commercial hybrid lines.
- Competitive grants should be pursued, with regional institutional approaches targeted for support and cooperation.
- Increases in feedgrain checkoff fees are encouraged for research support, with encouragement for continuity in existing program support for long-term benefit of investigations.
  - Matching research support from technology corporations and federal grants to match existing state appropriations should be sought.
  - The establishment of a director of funding for state-supported agricultural research is recommended to maximize private and public funding of research. Centralized funding strategies should be developed by such office through the coordination of regional research needs of the state.
  - Support should be requested from the state water plan fund for the study of sandy land irrigation efficiency, with matching support sought from private irrigation equipment manufacturers and fuel suppliers.



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## OILSEEDS

### INDUSTRY RESEARCH NEEDS RECOMMENDATIONS FUNDING STRATEGY

The oilseed industry in Kansas is emerging as a viable and successful cash crop in dryland as well as in irrigated production areas of the state. Producers are now investigating the use of non-program oilseed crops as an alternative to traditional productions and are, therefore, in need of data and recommendations concerning production practices, management techniques, residue requirements, and chemical control measures for these new cropping alternatives. The investigation categorized needs by type of oilseed crop through interviews with public and private researchers, the processing industry, the biotechnology sector, and crop consultants.



### INDUSTRY RESEARCH NEEDS

#### SOYBEANS

- Cooperative soybean testing with other state programs is recommended in areas of cyst nematode, bioengineering and molecular development, including remote sensing and image analysis.
- Composition of soybeans in protein content and complete amino acid testing needs to be included in state-supported soybean development programming.
  - Evaluations of producer and end-user needs should be established in state to match potential specialized market niches.
- Consumer demands in areas of dietary requirements of saturated and unsaturated oils should be included in state-supported oilseed research programs.
- Specific quality traits required by the processing industry should be considered equal to production and resistant characteristics used in variety development programs.
  - The state-supported soybean research program must recognize production problems and adapt chemical controls mechanisms to match such needs.
- Soybean variety development, with emphasis on pH of soils and irrigation management, should be pursued by publicly funded programming.

## OTHER OILSEEDS

- In conjunction with production recommendations, conservation compliance and residue requirements of non-program crops need to be analyzed by the research community.
- Research is needed in variety development of canola in areas of winter hardiness and adaptability.
  - Canola varieties from northern Europe should be sought for genetic development and resistance characteristics.
- Use of canola as a model system for other crop genetic improvements should be considered by private research organizations.
- Analysis of insecticide control measures for minor oilseed crops needs to be expanded, investigated, and made available to production sectors.
  - State performance tests need to be established for canola, and commercial interests should be encouraged to participate in yearly statewide experiment station variety testing.
- Companion studies on sunflower production practices should be established, with the continuation of variety performance tests conducted at statewide sites.
- Herbicide recommendations on crop rotations of oilseeds with other traditional crops need to be established by state research centers with emphasis on no-till and reduced-tillage practices.
- Screening programs for canola in Kansas are needed to secure traits conducive to Kansas climatic conditions and soil types.



## RECOMMENDATIONS

- Establishment of a state checkoff program for all minor oilseeds produced in Kansas is encouraged, with funds used for research development programs of respective commodities.
  - Cooperative state research support should be developed with those states with expertise in minor oilseed research developmental efforts.
- Publicly funded plant variety development of oilseeds should be maintained, with resultant strains to be incorporated into bioengineered technology for commercial release.

## FUNDING STRATEGY

- Investigation of royalties from the development of public varieties should be pursued.
  - Endowed private support for screening technologies of minor oilseeds is recommended.
- State funding for oilseed development programs should consider the use of technology enterprise support.

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# HORTICULTURE

## Basic Premises of the Horticulture Industry

- Food safety and environmental issues impact and transcend all of agriculture.
- Support for long-term investment in agricultural research is vital.
- Public funding—Federal and State sources—to support agriculture will become more limited as research needs continue to increase.
  - Horticultural research encompasses both food quality and environmental concerns.
  - The horticulture industry deals most directly in conveying products to consumers.
- Horticulture is the predominate urban agriculture activity in Kansas.

## INDUSTRY RESEARCH NEEDS

### Impediments to Meeting Research Needs

- Horticulture is a diversified industry involving eleven specialized commodity organizations.
- Each commodity is further diversified, involving many specific crops.
  - Incomplete information exists on the production, economic impact, and value of horticulture food crop production to Kansas economy.
- The value that the horticulture industry contributes to environmental protection and enhancement is difficult to document.

## ACTIONS and RECOMMENDATIONS

- Research initiatives focused on environmental contributions and benefits of the horticulture industry.
- Environmental contributions and benefits include protection and conservation of the environment; enhancement of the environment through aesthetic and recreational landscape development; and environmental safety through integrated pest management and low-input food crop production and maintenance strategies.
  - After analysis of the horticulture industry, it is encouraged that statistical reporting of horticulture production be expanded by the Kansas State Board of Agriculture, Statistical Division, Kansas Agricultural Statistics.



- The following should be reported: horticulture producers and extent of production; the multiplier effect of horticulture industries to economy of communities; the value and economic impact of horticulture industries; and development of a measure of the intangible benefits of horticulture to the citizens and State of Kansas, in terms of aesthetics, recreation, and environmental protection.

## **FUNDING STRATEGY**

### **Industry Sources**

- The turfgrass industry has several fund-raising sources within the industry—at the state level the Kansas Turfgrass Foundation, and at the national level endowments established by the Golf Course Superintendents Association and the National Golf Association. Some of the endowment monies are used for scholarships.
- The Horticulture Research Institute, HRI, maintains an endowment for research.

### **Checkoff Programs**

- The National Nurserymen's Association administers a voluntary checkoff program which is thought to currently generate approximately \$1 million a year.
- At least one state, Ohio, is known to have a checkoff program on nursery stock.

### **Manufacturers of Supplies/Suppliers of Products Used by the Industry**

- Chemical and pesticide companies, etc.

### **Philanthropic Organizations**

- Certain philanthropic organizations with environmental interests might be sources for research monies for specific projects.
- Groups organized to address environmental issues might also be sources.





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## MEAT PROCESSING

### INDUSTRY RESEARCH NEEDS RECOMMENDATIONS FUNDING STRATEGY

The state of Kansas is one of the leading states in the nation in red meat production. In fact, from approximately 1986 through 1990, Kansas ranked first in the nation in red meat production. In order to maintain and increase the pre-eminence of this industry in the state, it behooves the state and its people to do all in their power to assist the development of new knowledge in this industry. This means that the state should take a leadership role in encouraging and funding research and development. The basic structures to do so are present in the state, thanks to previous acts of the state legislature and industry leaders.

Kansas State University has the physical structure to be a world leader in meats research with the completion of the Weber Hall renovation and addition of 1988. This facility could provide the basic physical structure to house what could be a world-class meats research and teaching center. In order for this to be achieved, additional sources of funding must be found to enable the state to bring the technical expertise and equipment needed to focus on specific research problems and bring them to resolution.

The KVAC (Kansas Value Added Center), LMIC (Livestock and Meat Industry Council), the State Board of Agriculture, and Kansas State University must all work more closely with one another in the area of meats and meats related research. These entities should not be competitive in nature, but should be mutually beneficial. Every effort should be made to give all groups wider exposure to the industry. This could be done in many ways, but an excellent starting point is the potential joint sponsoring of some meat industry related seminars on topics that are current and of interest. This type of exposure would assist these entities in becoming more industry focused and recognized as sources of industry information. This type of recognition would greatly aid in the later accumulation of research dollars.

The State Board of Agriculture should take the lead in attempting to develop the "Endowed Meats Research Fund" concept mentioned in these notes. The Board is the logical choice, since it represents all agricultural interests in the state and could do so without seeming to be promoting its own self-interests.



## RECOMMENDATIONS

### MEATS RESEARCH/EDUCATIONAL SEMINARS

- There is a need for a continuing series of seminars within Kansas focusing on what is new in the field of meat science. This is something which the State Board of Agriculture could take a leadership role both in coordinating and in holding.
- Seminars could be held in cooperation with KSU, the American Meat Institute, the National Livestock and Meat Board, and the American Association of Meat Processors, to name a few. The focus of these seminars should be targeted to the audience and could be open to the entire U.S., helping to establish Kansas' reputation as a leader in meats education and research.
- Seminars should be self-funded by charging participants a fee to cover expenses. This means the programs would have to be first class in order to attract participants.

### CONSORTIUM FUNDED RESEARCH

- The KVAC (Kansas Value Added Center) should be the probable focal point for the forming of consortiums for doing meats research. In order to enhance the probability of this succeeding, it may be necessary to structure this so that funds put into the structure would be tax-deductible. With this in mind, consideration should be given to a joint effort concerning a funding arrangement between KVAC and LMIC, since LMIC is already set up to receive tax-deductible funds.
- Funding should be governed and directed by a board established and made up of representatives of individuals and/or companies that have invested the money in the consortium.
  - Consideration should be given to a repayment system; any project that develops a product and/or process which becomes profitable after a certain time period must pay an additional sum to a fund that could be used for other meats research activities.

### PRIVATE USE OF PUBLIC RESEARCH FACILITIES

- Consideration should be given to establishing a system which would allow small businesses which cannot afford private research and development facilities to utilize the publicly owned research facilities for a use-fee. This would entail determining who would be eligible to use facilities. Research would be directed by the company leasing the facilities. Scheduling use of the facilities would be done by a joint industry/university committee. This committee structure would have to be decided prior to beginning this type of research, and membership should be determined by state government.

### SERVICE ANALYTICAL LABORATORY

- The state is in need of a USDA Accredited Laboratory for meat product testing. Such a laboratory is currently needed by small meat processors in the state, and will be increasingly necessary in the future. There seem to be two options: 1) working with an existing laboratory in the state to assist in receiving accreditation, and 2) using state funding to establish a service laboratory for use by the small meat processors in the state. The long-term objective should be that such a lab be self-supporting within a five- to six-year period of time.



## FUNDING STRATEGY

- One of the first sources of potential funding that should be looked at is the commodities themselves, since they would be the primary beneficiaries of research findings. Commodity checkoff sources include the Beef Industry Checkoff, the Pork Industry Checkoff, the Lamb Industry Checkoff, and the Feedgrain Industry Checkoffs.
- Private industry contributions and funding from the state legislature should also be included.
- An objective should be established concerning how much funding is needed and desirable in order to provide adequate resources to maintain a viable research program for the next 20 to 30 years.
- A group of industry leaders should be brought together to establish a target goal for an endowed research fund for meats research; the group's objective would be the funding of meat research in Kansas. The fund goal might be \$10 million, with interest on such available to fund research.
- The fund might also be used to fund an endowed Meats Research Chair at KSU to be filled on an as-needed basis. When a research problem needs to be solved, the best talent available could be brought in for the specific time period necessary. This chair would not necessarily be a permanently filled position nor even have a definite time period to the appointment. Instead, the appointment should be for the time period needed to conduct the research.
- A governing structure would need to be established to administer the Endowed Meats Research Fund. This structure should include representation from the industry groups responsible for the initial monetary investment. This structure should be established at the time the initial decision is made to build the fund. The LMIC (Livestock and Meat Industry Council) already is in existence at KSU and is the logical vehicle to receive and disburse the funds. LMIC would have to agree to allow input from the governing structure concerning administering of the meats research funds.
- Voluntary contribution would be the preferred method of accumulating funds. Every effort should be made to allow the groups mentioned to mount a voluntary campaign to fund the Endowed Meats Research Fund.
- If voluntary efforts fail to achieve the levels of funding needed, then the legislature should be approached concerning the possibility of a state legislated checkoff on meat and meat products produced in the state in order to build the fund. This checkoff could be established with the objective of accumulating the targeted amount of money needed to establish the Endowed Meats Research Fund. When the targeted amount of money is accumulated, the checkoff could be dropped.



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## LIVESTOCK

### INDUSTRY RESEARCH NEEDS RECOMMENDATIONS FUNDING STRATEGY

Due to the vast size and production of livestock in Kansas, research must be focused both on domestic needs and on international concerns. Broad-based livestock research needs to be applied not only to live animals, but to their end products such as meat, milk, semen, and embryos. Other areas which directly relate to production and which need to be addressed are the concern for the environment, animals rights issues, and governmental regulations—both U.S. and foreign.

### INDUSTRY RESEARCH NEEDS

- Continue to work with appropriate officials to reduce regulations regarding the sale of meat and meat products, live animals, embryos, and semen to foreign countries.
- Monitor all animal rights issues and police the industry to avoid presenting areas of violations.
- Encourage researchers to conduct research in areas of environmental pollution—soil, water, and air—in regard to livestock production.
- Promote research on low-fat ground beef, on leaner choice cuts, and on additional uses for by-products.
- Conduct research on production of additional ready-to-eat "fast foods" made from red meats for consumption in the home.
  - Explore more avenues in research of production, processing, packaging, and transportation of meat that meets overseas market demands.
- Support the use of checkoff dollars to continue educating consumers about the attributes and good qualities of red meat.
- Encourage producers to follow all restrictions and withdrawal times on all drugs, hormones, and additives used to ensure meat product safety.
- Expand KSU research programs on efficient stocker and cow/calf production. Most past research has concerned feedlots.
  - Continue to support and increase research programs which enhance the education of foreign buyers. Issues such as meat quality, product safety, production methods, product utilization, and willingness to supply market demands should be included.
  - Support biotechnological research, which can make livestock products more competitive and can enhance quality.



- Research investigations of reproduction inefficiencies in beef and swine production needs support.
- Studies addressing the enhancement of nutritive utilization in beef cattle needs expansion.

## RECOMMENDATIONS FUNDING STRATEGY

- Support MEF and KBC checkoff programs for research concerning meat products, foreign markets, consumer education, packaging, transportation, and product safety.
- Encourage producer groups to support the most efficient use of checkoff dollars, which have a relatively high rate of investment return.
- Encourage and lobby for additional state monies for KSU livestock programs in meat research, environmental effects, and production methods.
- Encourage member support of producer organizations that can work to reduce restrictive regulations inhibiting exports of meat and animals, that can assist in educating animal rights groups, and that can develop acceptable programs for the environment.
  - Investigate the willingness of private companies to donate research monies for projects which would benefit both the livestock industry and such private entities.



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## WHEAT PROCESSING

### INDUSTRY RESEARCH NEEDS RECOMMENDATIONS FUNDING STRATEGY

#### SUMMARY

The committee identified several factors which pose a threat to Kansas' competitive position in wheat and wheat processing. There are concerns that the Kansas wheat crop is failing to meet the increasing demands of modern day processors and end users.

Outlawing of insecticides based on criteria of doubtful validity creates worries for the future safe storage and processing of wheat into flour. Insufficient funding for research is another threat to the Kansas wheat industry's competitive position. Money to develop new wheat varieties, new technology for grading, and new grower incentive or reward systems is essential.

Efforts on research projects relating to wheat and wheat processing presently in progress in Kansas.

- Kansas State University (KSU) in Manhattan conducts research into all aspects of breeding, harvesting, storing, milling, baking, and other uses of Kansas hard red and white winter wheats.
- In FY89, approximately \$7.3 million was spent at KSU on wheat research. Fund sources, using the most recent figures available, were Allocated Federal, 13.2 percent; Other Federal, 14.7 percent; State, 42.0 percent; Sales, 13.7 percent; Industry, 8.1 percent; and Other Non-Federal, 8.2 percent.
- USDA-ARS Grain Marketing Research Laboratory (GMRL) in Manhattan is unique to the USDA and contains three interdisciplinary research units—Grain Quality and Structure Research, Engineering Research, and Biological Research—all relating to quality of wheat and other cereal grains. The GMRL operates with a staff of 18 research scientists, 18 technicians, and 9 specialists and support personnel. The annual budget of approximately \$3.5 million is made up of all federal funds. Soft monies exist to a small percent above this amount.
- Hybritech International, Inc., Wichita, is a company owned by Monsanto and is one of the few private wheat breeding firms left in the Great Plains region which is breeding hard red winter wheat. Hybritech now has nine hybrids marketed from Texas through Montana. Hybritech employs three hard wheat breeders and one soft wheat breeder. There are approximately 20 full-time people in the breeding area.
- Goertzen Seed Research, Inc. in Haven is a small wheat breeding company owned and operated by Ken and Betty Goertzen. They and a few family members are breeding both varieties and hybrids of hard red winter, hard white winter, hard red spring and soft red winter wheats; the company also works on tricale and barley.



Factors posing a threat to the competitive position of Kansas relating to wheat and wheat processing.

- The needs of millers and bakers have increased. They are demanding higher milling and baking quality wheat; research investments need to be made in order to produce, identify, segregate, and market high quality wheat varieties.

A widening disparity in Kansas wheats offered is resulting in a continued decline in the ability of the Kansas wheat "crop" to meet the needs of modern day processors and end users. "Crop" is defined as the total mixture of wheat varieties and hybrids grown as affected in any given year by the weather. It has been estimated, by milling and baking representatives on the subcommittee, that on a scale of one to ten, the ability of the Kansas wheat crop to satisfy customer requirements has dropped from seven to five since the early 1980s.

The subcommittee made it clear that they were not criticizing past Kansas research efforts. The quality of hard red spring wheat has also declined. They recognized that past research in Kansas has successfully developed hard red winter varieties with very good milling and baking qualities. Without these desirable varieties, matters would be much worse.

A continued decline in the quality of Kansas wheat will eventually force wheat users to satisfy their needs from alternative market sources. Because the needs of U.S. users are more demanding, source substitution will be reflected in the domestic market first, thereby also endangering the continued economic viability of Kansas flour mills. However, export users of wheat are becoming more sophisticated; they too can be expected to demand higher milling and baking quality. Both domestic and export markets are important to the well-being of Kansas agriculture. The domestic market creates constant and growing demand for Kansas wheat. The export market absorbs from one-half to two-thirds of our crop in any given year, depending on size and international competition.

Reasons for the decline in milling and baking quality are listed:

The market structure and farm programs provide economic incentives for the grower to plant wheat varieties that offer high yield without regard for quality factors. Although there are quality premiums presently being paid by the milling industry, for the most part these premiums are being paid to the elevator operators, not to the growers. For overall crop quality to be upgraded, a way must be found to reward the grower for planting varieties and hybrids that are known for milling and baking quality.

Varieties reflecting good milling and baking quality factors are being developed and, hopefully, will continue to be developed by the KSU breeding program and a few other programs. However, the quantity of such varieties grown is not sufficient to raise overall quality due to the large number of high yielding, poor quality varieties released by other breeding programs.

Although weather continues to be the most important factor affecting milling and baking quality in any year, variety is the most important quality factor over a period of time. These poorer quality varieties are being developed because they are higher yielding, and the technology for distinguishing milling and baking characteristics does not exist at the elevator.

U.S. grain standards do not adequately reflect some of the most important milling and baking quality factors that concern wheat



users. Simply changing the standards is not the complete answer; present testing technology inadequacies do not permit stricter standards.

The wheat processing industry has maintained a dynamic nature in recent years. Modern end-use processing philosophies are placing increasing demands on wheat end-use quality. Communication of these processing requirements to breeding programs has been insufficient.

Desired milling and baking industry quality characteristics in wheat must be better defined and communicated to breeders and growers. Better and rapid testing procedures to identify these characteristics need to be developed that can be used by breeders, by the grain trade at all levels, and by industry. Present tests require too much time to perform and are too subjective.

In the past, some high yielding varieties have been released that do not possess needed milling and baking quality characteristics. Better communication of quality needs by users may have helped prevent the release of some of these varieties. In other cases, the high yielding and disease resistance characteristics of a variety may have been given priority over quality. The presence of such varieties in the marketing system in quantity usually ends up as problems for users, since elevators customarily comingle wheat received.

Through the Wheat Quality Council, the baking industry is striving to agree on six flour performance characteristics which can be used by USDA GMRL, KSU, breeders, and others for testing new varieties. The bakers plan to meet with millers to ensure agreement, so that both groups can present a united front.

Kansas growers want to do the right thing. They need the milling and baking quality information on varieties to make good planting decisions, plus they need an incentive to grow certain varieties. Rapid, quality tests are needed so elevators can know the milling and baking quality of wheat being delivered and pay growers for it.

- The outlawing of insecticides is sometimes based on criteria of doubtful validity.

Insecticides are important to control grain weevil activity in stored wheat. Although there is no known association of the flour weevil to disease, FDA standards force the condemnation of flour with insect fragment counts over "action levels." If grain weevil activity is not controlled in stored wheat, flour milled from such wheat will have an unacceptably high number of insect fragments.

Insecticides are being banned by the EPA based on criteria subject to question. No effective alternatives to present insecticides are available that are economically feasible.

Foreign competitors are not bound by EPA or FDA regulations.

Because of the public interest involved, criteria for banning insecticides should be re-examined by federal and state agencies. Research for the development of new insecticides by the private sector should be encouraged by changes in laws and regulations that would make the economic risks assumed for such product development reasonably acceptable to industry.

- An insufficient funding of research exists.

Money to develop new wheat varieties, new technology, and new grower incentive or reward systems is essential.

Varieties tend to lose their desirable characteristics from the standpoint of growers and users. We must continue to develop



new varieties that offer yield, disease resistance, and desirable milling and baking qualities.

Since the major load for wheat breeding today falls on state agricultural universities, and because Kansas is the leading wheat state, the demands on KSU breeders have increased to the point that additional help is needed. Needed is a molecular geneticist to work in Manhattan, as is an assistant wheat breeder at the Hays Experiment Station.

Due to limits in funding at the USDA GMRL, KSU needs to initiate an early generation testing program for evaluating the milling and baking quality of its early wheat varieties. This will demand funding and personnel—and, ideally, a building providing space for samples and a quality testing laboratory. The USDA will continue to work with KSU and other regional breeding programs and with the Wheat Quality Council to provide large and small scale testing of state breeding programs advanced yield trial and later generation materials slated for possible release.

The USDA may need to perform research to determine the effect of blended wheats or flours of interest to the commercial bakeries. Funding will be needed to develop such tests and to ensure the tests correlate to baking industry needs. To help guide variety development, bakers need to feed information back to millers, evaluators, and breeders. The USDA must be able to evaluate mixes of varieties in the same intense way a bakery does.

Since distribution and use of varieties once released to growers is difficult, there is no practical way to adequately reward private breeders for the work they may exert in variety development. A variety is not a hybrid, the distribution of which can be controlled. The distribution of a variety can be somewhat controlled if grown by farmers under contract. However, to be economically feasible such wheat must be grown in locations close to the contractor, and the market needs for large quantities of quality wheat are very unlikely to be satisfied. Because of these factors, variety development has become the principal domain of state agricultural universities.

The number of private breeders is declining. If the Plant Variety Protection Act were amended to provide adequate protection to private breeders and if laws in states were tightened and enforced, there would be a reward for private wheat breeders. With no change to the PVP Act, state and federal funding is the only source for the amount of money needed in this area.

We need to be aware that some of our major competitors in world wheat production have very strict PVP Acts and even require and enforce payment of royalties on farmer grown seed when produced from privately developed seed.

New testing technology likewise has a public interest that makes the public funding of research efforts desirable. Technology that provides the quick and easy identification of quality characteristics would enable a welcome change in grain standards and would enable the market to reward the grower directly for quality.

Incentive structures need to reward the grower for planting quality wheat, but a way also needs to be found to make it economically feasible for elevators to identity preserve high quality wheat. If proper incentives are in place, the entire grain marketing system will respond and change.



It is of vital importance to the economic well-being of Kansas and to the agricultural and food sectors of the U.S. economy that adequate funds be made available for research efforts.

The subcommittee believes that the establishment of a continuing forum for the continued exchange of information between the breeder, grower, seedsman, grain trade, and the milling and baking industry on the subject of wheat research under the auspices of the Kansas Secretary of Agriculture is advisable. The information gathered would enable the secretary to more effectively interact with the state legislature and congress on the question of state and federal research funding concerns.

## RECOMMENDATIONS

### KANSAS STATE BOARD OF AGRICULTURE

- The Kansas Secretary of Agriculture should appoint a committee comprised of breeders, researchers, growers and industry to act as a forum to consider agricultural research efforts. Terms of two or three years would be desirable. An annual report should be made by the committee to the secretary reporting on the progress of current research projects, research goals, and funding levels needed. The secretary should use the annual report as an important and impartial source of information for use in communicating with the state legislature, congress, and the general public.
- The wheat industry should encourage the strict enforcement of the seed law in Kansas.

### KANSAS STATE UNIVERSITY

- The State of Kansas should fund the early generation quality testing of new wheat varieties under development at KSU. Properly done, this project would cost an initial \$394,650, and then approximately \$254,000 in following years.
- The State of Kansas should fund both the hiring of a molecular geneticist to work at KSU and an assistant wheat breeder for the Hays Experiment Station, plus the necessary technicians and equipment to assist them. Initial cost would be \$265,000; approximately \$190,000 would be needed in years following.
- The State of Kansas should fund research at KSU to determine ways of providing new reward systems which would provide financial incentives to entice growers to both produce wheats with enhanced milling and baking quality and to keep wheat as a food grain versus a feedgrain.
- A list of the milling and baking quality rankings of Kansas wheat varieties and hybrids has been sent to KSU extension offices. The new list should be widely disseminated by extension, the Kansas State Board of Agriculture, in farm magazines, etc. It is hoped that producers will use the list and consider planting varieties with the desired milling and baking qualities. Otherwise, marketers contend, Kansas producers will lose wheat sales to other U.S. groups and to export millers and bakers.
- KSU and the USDA should be encouraged to develop a rapid test for quality characteristics that can be used by local elevators when purchasing wheat from producers.



- KSU and the Wheat Quality Council should develop and publish a list of varieties grown in each of the nine crop reporting districts in the state. The list should be distributed to growers and other interested parties. It should clearly rank the varieties by milling and baking quality characteristics and should be updated yearly.

### **USDA-ARS GRAIN MARKETING RESEARCH LABORATORY**

- The federal government should be encouraged to increase its funding of the USDA Grain Marketing Research Laboratory in Manhattan. Increased program funds of \$1.25 million to the lab beginning in 1993 will allow the initiation of an expanded effort to solve many current wheat quality problems facing not only Kansas but the U.S. This effort includes the development of new and improved quality tests that are greatly needed. The lab is doing crucial wheat quality work, but desperately needs enhanced funding. The lab also needs some facility repair and renovation of \$1.7 million to meet modern codes.
- USDA-ARS should be encouraged to continue protein research at its various labs, including Manhattan, so rapid functional performance tests can be developed.
  - Basic research in the area of insect control needs to be encouraged and funded.

### **OTHER RECOMMENDATIONS**

- For the short-term, the best description for quality is variety, and elevator operators should work with customers to bin by variety or groups of varieties plus protein and any other quality factors, and should reward or discount for quality or lack thereof. If exceptional varieties are binned separately, an incentive should come through the system clear to the producer to make it worth the effort to raise, bin, and keep the wheat separate. Millers and bakers need to pay for the extra value in good milling and baking quality wheats.
  - The EPA should be encouraged to re-evaluate its criteria for banning pesticides. Unless a health hazard is clear, probable, and imminent, pesticides should not be banned unless other and more acceptable insect control measures are available.
  - Millers and bakers should be encouraged to develop definitions of quality in the form of parameters or acceptable ranges that will enable better communication with researchers, wheat breeders, and growers. Because of the long lead time needed to develop desirable varieties—ten to twelve years—priority should be given to this effort.



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Greg Frazier, Staff Director, U.S. House Subcommittee on  
Wheat, Soybeans, and Feedgrains,  
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Steven Graham, Kansas Wheat Commission,  
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## HAY and FORAGE

### SUMMARY and RECOMMENDATIONS

- Bio-mass research on forage materials, especially that which may be grown on CRP lands, is recommended.
  - There is a continuing need to maintain the position of Alfalfa Breeder at Kansas State University.
- Feed trial research is needed to compare alfalfa pellets to other feed sources.
  - New energy sources for processing plants should be sought.
    - New methods of harvesting should be investigated.
  - Integrated forage management and complimentary forage systems should be investigated.
- Chemigation issues remain important and deserve attention.
- Dissemination of research information and results, which may include increased usage of public media, should be improved.

### ACTIONS REQUIRED

- The Kansas Congressional Delegation should be strongly urged to work for the funding of the USDA Alfalfa Breeder position, or the state should be encouraged to fund this position.
- Support should be given to Kansas Livestock Association initiatives in grazing research.

### FUNDING STRATEGY

- Support the Margin of Excellence.
- Look at possible regional funding in cooperation with other states.
  - Explore industry checkoff funding.
- Seek opportunities to do cooperative research with individual companies.





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## AGRI-BUSINESS

### INDUSTRY RESEARCH NEEDS

#### PRIORITY 1: CROPS

- Continue to develop varieties that are of benefit to Kansas agriculture. Factors other than increased yields should be considered, factors such as disease resistance, drought resistance, mill and bake qualities, protein, and any factor that could add value to a commodity.
- Efforts in wheat breeding will have to be increased to fill the void caused by the departure of private breeding programs.
- Study the ways that biotechnology may be teamed with conventional plant breeding methods to shorten the time required to generate a new variety of benefit to Kansas agriculture.

#### ACTIONS and RECOMMENDATIONS

- Increase breeding efforts, especially in wheat, at Kansas State University.
- Recommendations on breeding research efforts should come from both the production side and the agri-business community.
- Increase efforts to bring about cooperation between the grain industry and the wheat breeding community in order to alleviate some of the problems that are occurring within the industry concerning varieties.

#### PRIORITY 2: SPECIAL CONCERNS

- Increase efforts to improve the enforcement of the Plant Variety Protection Act.

#### ACTIONS and RECOMMENDATIONS

- Increase the enforcement efforts of the Inspection Department of the Kansas State Board of Agriculture. If enforcement efforts do not take place, an ever-increasing number of private breeding programs will be discontinued. The long-term effects on Kansas agriculture would be very detrimental.



### **PRIORITY 3: GRAIN STANDARDS and QUALITY**

- Reevaluate the current standards for all grains to keep them relevant to current agricultural efforts and plant breeding techniques.
- Develop a uniform grain grading system that would be "objective," rather than "subjective," as the current system is.
- Study the value of "clean grain" versus "bin run grain" to the end-user, the miller and/or exporter. Determine if there is a willingness to pay for a product improved in such a way.
- Study the methods, and especially the chemicals, needed to improve the storage of grain, seed, and food products.

#### **ACTIONS and RECOMMENDATIONS**

- Reallocate funds and increase efforts in the KSU grain science program.
- Agri-business and the grain industry should be consulted as to the direction of grain science research.

### **PRIORITY 4: PRODUCTION ECONOMICS**

- The Kansas Variety Trials are an important decision making tool for Kansas farmers. This is especially true since crop decisions are all site-specific. There should be no attempt to scale back the KVT.
- Study the area of seed and chemical coating combinations for increased protection from insects and weeds.
- Study the impact of commodity checkoff programs in the development of markets and value added alternative uses for current crops.

#### **ACTIONS and RECOMMENDATIONS**

- Develop a closer alliance between private and public research efforts to eliminate duplication.
- Develop a process whereby public research efforts may adapt private research findings.
- Agri-business should have input on directions of production agriculture research efforts.
- Educate the agri-business community and producers about the value of checkoff programs.

### **PRIORITY 5: ALTERNATIVE CROPS**

- With the profit potential of alfalfa to Kansas agriculture, there must be expanded effort in alfalfa research, especially in the area of usage in alternative forms.
- Continue to study alternative uses for Kansas grain crops, such as the use of grain alcohol fuels. This should include value-added obtained.



## **ACTIONS and RECOMMENDATIONS**

- Begin studying alternative crops from a marketing approach. Begin by studying markets and their needs; then, determine if there is an alternative crop to meet those needs.

### **PRIORITY 6: SOILS**

- Study the area of ecological responsibility in the use of agricultural chemicals and fertilizers. This should include application methods and rates.
- There must be increased research studying water usage including the following areas: most efficient irrigation delivery systems, dry land production methods, and drought resistant varieties.

## **ACTIONS and RECOMMENDATIONS**

- Develop a closer alliance between private and public research efforts to eliminate duplication and increase effectiveness of research efforts.
- Develop a process whereby public research efforts may adapt private research findings.

## **GENERAL AGRI-BUSINESS ACTIONS and RECOMMENDATIONS**

- There must be increased effort to educate the growing urban population about the relative value of Kansas agriculture and agri-business to overall quality of life and well-being. This education must include increased effort to defend use and safety of agricultural fertilizers and chemicals.
- Study must continue on agri-business needs and on developing educational programs required to fill those needs.
- Rural resources—physical plants and people—must be studied to help develop plans using those resources to keep small, rural communities alive.
- Above all, research efforts must be held accountable. There must be a mechanism in place to evaluate research efforts on a regular basis and to continue to keep those efforts focused and relevant. Agri-business must be included in the evaluation process.

## **FUNDING STRATEGY**

- Efforts must continue to acquire funds from federal and state government sources.
- Agri-business should re-evaluate and reallocate current levels of all research funding.
  - Endowments from private individuals and companies should be obtained.
- Royalties from publicly developed PVP varieties should be used.
- Checkoff systems and user fees from agri-business and producers should be collected.



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