Approved April 2, 1986
Date

MINUTES OF THE Senate COMMITTEE ON Agriculture.

The meeting was called to order by Senator Allen at
Chairperson

10:09 a.m./p.m. on April 1, 1986 in room 423-S of the Capitol.

All members were present ~~except:~~

Committee staff present: Raney Gilliland, Legislative Research Department
Arden Ensley, Revisor of Statutes Department
Avis Swartzman, Revisor of Statutes Department

Conferees appearing before the committee: Don Jacka, State Board of Agriculture
Steven Graham, Kansas Wheat Commission
Dr. Charles Deyoe, Director, International Grains Program
Marjorie White, Kansas Agri-Women
Jeanne Mertz, American Agri-Women
Steven Anderson, farmer, Alma
Chris Wilson, Kansas Grain and Feed Dealers Assoc.
Howard Tice, Kansas Association of Wheat Growers

Senator Allen called the Committee to order and called attention to Committee minutes.

Senator Gannon made a motion the minutes for the March 25, 26, and 27 Committee meetings be approved. Senator Warren seconded the motion. Motion carried.

The Chairman announced the Committee would be hearing SCR 1639 and then he called on Don Jacka, State Board of Agriculture, to testify.

Mr. Jacka explained that SCR 1639 was a resolution that would allow the State Board of Agriculture to raise the inspection fee for commercial fertilizers from 15¢ to 30¢ per ton. At present the fee collected does not cover the cost of the program, thus, the increase is needed. Mr. Jacka requested the Committee recommend the resolution favorable for passage.

During Committee discussion Mr. Jacka explained that the State Board of Agriculture does not inspect the machinery used in applying fertilizer; they inspect only the fertilizer.

The Chairman announced the hearing closed on SCR 1639 and called for Committee action. Senator Gannon made a motion the Committee recommend SCR 1639 favorable for passage. Senator Montgomery seconded the motion. Motion carried.

The Chairman stated the next to be heard would be SCR 1640 and then called on Steven Graham to testify.

Mr. Graham gave copies of his testimony to the Committee (attachment 1). Mr. Graham a proponent for SCR 1640 requested the state fund the portion of the budget for wheat research at Kansas State University that the Kansas Wheat Commission has been funding. Mr. Graham requested the funding be added to the budget for Kansas State University so that wheat research will be continued.

Committee questions concerned what was being done with the money the Legislature had provided to Kansas State a couple years ago for research. Mr. Graham stated the Kansas Wheat Commission was not a part of that research so he did not know any details pertaining to that funding. The comment was made that this resolution was introduced to draw attention to this research. Mr. Graham agreed that the funding necessary for the wheat research could go up some each year.

The Chairman thanked Mr. Graham and called on Dr. Charles Deyoe to testify.

Dr. Deyoe gave copies of his testimony to the Committee (attachment 2). Dr. Deyoe expressed support for SCR 1640.

In answer to Committee questions, Dr. Deyoe answered that no research has been done on sorghum at Kansas State. When ask if a written statement had been prepared showing how that money the Legislature budgeted for research a couple years ago was spent, Dr. Deyoe said he would be glad to see that the Committee received that information.

The Chairman thanked Dr. Deyoe and welcomed Marjorie White to the Committee to testify.

Ms. White gave copies of her testimony to the Committee (attachment 3). Ms. White encouraged the Committee to recommend that the state fund the research of wheat at Kansas State.

The Chairman thanked Ms. White and then called on Jeanne Mertz to testify.

Ms. Mertz handed copies of her testimony to the Committee (attachment 4). Ms. Mertz expressed support for SCR 1640 by the American Agri-Women.

The Chairman thanked Ms. Mertz and called on Steven Anderson to testify.

Mr. Anderson requested, as a farmer, that the Committee consider whether such research will improve conditions for wheat farmers in Kansas. He suggested that research, as suggested in SCR 1640, would be only chicken feed when the total agricultural needs of our state are considered. Mr. Anderson stated that Kansas State had opposed research on gasohol; he stressed we needed consistency in our research. He suggested the results of such research should be available so it is known what is being done with research funding. Mr. Anderson stated that the best research is done by businesses. Mr. Anderson encouraged cooperation between states in research so that research is not being duplicated. Mr. Anderson requested the Legislature, if they fund this research, to monitor the program so as to be sure the state gets its dollars worth from the wheat research.

The Chairman thanked Mr. Anderson and called on Chris Wilson to testify.

Ms. Wilson handed copies of her testimony to the Committee (attachment 5). Mr. Wilson encouraged the Committee to recommend SCR 1640 favorable for passage.

The Chairman thanked Ms. Wilson and called on Howard Tice to testify.

Mr. Tice gave copies of his testimony to the Committee (attachment 6). Mr. Tice stated that compared to the total state budget that agriculture receives a very small share. Mr. Tice suggested that it is the states' job to fund the wheat research and he applauded the Senators that requested SCR 1640.

The Chairman announced that since Committee time was over that the hearing for SCR 1640 would continue the next day, April 2, and that also, at that time, the Committee would hear the report from the subcommittee on SB 735. The Chairman adjourned the Committee at 11:00 a.m.

GUEST LIST

COMMITTEE: SENATE AGRICULTURE DATE: april 1, 1986

NAME (PLEASE PRINT)	ADDRESS	COMPANY/ORGANIZATION
Chris Wilson	Hutchinson	KS Grain & Feed
Tom Tunnell	"	" "
Dan Stockstill	Smith Center	USD 237
Steve Zinger	Winfield	Wheat Comm
Steven Graham	Manhattan	KS. Wheat Comm.
~~Howard Tice~~	Hutchinson	KAWG
~~Rodd Robinson~~	Topeka	KLA
Mary Hellebust	Manhattan	KFRC
Sarah Wyatt	Wamego	Ks Farmers Union
John Blythe	Manhattan	Ks Farm Bureau
Paul E. Fleener	"	" "
Charles DEYOE	~~KSU~~ Manhattan	Kansas State University
Emmett Koch	Centralia	Farm
Stephen Anderson	Alma	AAI
Mary Harper	Healy	
Joanne Mast	Manhattan	American Agri-Women
Margo Wilke	Bellevue	Ks-Agri-Women
Kenneth M. Wilke	Topeka	Bd. of Agriculture
Rebecca Crenshaw	Topeka	Assoc. Coin. Commissioners

KANSAS WHEAT COMMISSION TESTIMONY

BEFORE THE

SENATE AGRICULTURE COMMITTEE

APRIL 1, 1986

STATEHOUSE

TOPEKA, KANSAS

Chairman Allen, members of the committee, ladies and gentlemen, I thank you for the opportunity to testify today concerning Senate Concurrent Resolution 1640. My name is Steven Graham, and I am the Kansas Wheat Commission's administrator.

During the 1984 legislative period, legislators decided that the state should put more emphasis on agriculture and decided to fund some new research projects at Kansas State University. Four projects were selected for funding: Wheat as a Feed, Feed-Wheat Breeding, Development and Evaluation of Wheat Hardness Tests, and Wheat Utilization: Nonfood and Nonfeed Uses.

The Kansas Wheat Commission was asked to contribute funding to this effort and volunteered to put $25,000 towards the development and evaluation of wheat hardness tests. The commission volunteered for this project because the grain grading dilemma between hard and soft wheats was already becoming apparent and our wheat producer board members felt the need to become involved in this project, whether the legislature eventually funded the project or not.

4-1-86 Sen. Ag.
attachment 1

After the 1984 legislative period was over, the commission was notified that it would be funding the Wheat Utilization: Nonfood and Nonfeed Uses project at a level of $75,000. The commission had never been contacted about this change in projects or funding and still does not know why the changes were made. However, our wheat commissioners realize the need to research new uses of wheat and have funded many projects over the years in this area. Some examples of such projects are: the use of wheat gluten in various ways, the use of wheat or wheat by-products in feed, production of pasta or oriental noodles using Kansas wheat, the use of Kansas wheat in Chinese bread and other foods, etc. Therefore, the commissioners, in general, were supportive of the project concept, despite the fact the commission had not volunteered or been asked to contribute funding.

The Kansas Wheat Commission suggested that the project be put together with a good team of people who would work hard to further the goals of the state and the commission in this project. Last week our commissioners heard the second year's report on the research underway. We feel the work is progressing very well, and the commission is encouraged to see the cooperation among researchers in the Grain Science and Industry Department, with outside industry and with other universities.

As I mentioned earlier, the commission's funding for year one of the project was $75,000 and for year two $80,250. Due to increased feeding of wheat last year (wheat on which no wheat tax was collected oftentimes) and the acreage cutback, we are seeing that the commission is faced with funding difficulties which make

sponsorship of this project impossible for fiscal year 1987. In fact, the commission had to eliminate several other research projects and negotiate an across the board cut in the remaining KSU funding for FY 86 and FY 87.

Also, U.S. Wheat Associates, our international market development organization, has reduced the amount state wheat commissions will have to pay for its activities in FY 87 in order to help the various wheat commissions through these tight times. Even with all of these reductions, the Kansas Wheat Commission will face greatly reduced fund balances by the end of FY 88.

A huge unknown is the eventual effect federal funding cutbacks will have on U.S. Wheat Associates in the future. Two-thirds of U.S. Wheat Associates budget (total budget in FY86 is $9.3 million) comes from the U.S.D.A.'s Foreign Agricultural Service, and one-third is from the 14 state wheat commissions. At this time, U.S. Wheat Associates is facing a threatened 50% cut in FAS funding for FY 87. We are hopeful the funding can be restored because, if it is not, the 14 state wheat commissions will be forced to try and somehow make up a part of the funding shortfall.

I did not come here today to discuss all the funding problems facing the commission but to testify in favor of Senate Resolution 1640 and to ask that the Kansas Wheat Commission dollars which have supported the nonfood/nonfeed project be replaced by others from the State General Fund and that the money be placed into KSU's budget.

At the wheat commission's board meeting last week, the

commissioners discussed the idea of the state funding research to enhance existing or new industries which manufacture value-added agricultural products. The commissioners strongly favor such research being conducted, if it is funded using new monies. The commissioners are not in favor of taking money from today's successful agricultural research projects for the new value-added projects.

Rather, the commissioners suggest that we have done some research in this area over the past few years. If the state is to do more in the value-added research area, then this area must be treated as a new research area with its own priorities and funded with new dollars.

On a recent visit to Argentina and Brazil, one of my board members was shocked to see the emphasis those countries are putting on new wheat and sorghum varieties. They also are working hard to establish a system similar to our extension service to get new knowledge out to their producers.

In France, another board member heard of their work to improve the milling and baking quality of French wheat and was briefed on the future impact to American wheat exports of the new European starch and gluten plants.

Thus, the need is to maintain our competitive position in the more traditional agricultural research areas, and today's research programs are doing just that. The Nonfeed/Nonfood Uses of Wheat project is a step into the area of new product technology and value-added research, and the Kansas Wheat Commission strongly supports continuation of this project. The

commission also supports new state monies being targeted for research to enhance existing or new industries which manufacture value-added agricultural products.

Thank you for the opportunity to testify this morning.

Statement prepared for the Kansas Senate (1640)
4/1/86

Technology to Utilize Kansas Grains

Background: During 1985 Kansas farmers produced over 900 million bushels of grain. Kansas, the number one milling capacity state utilizes 70-80 million bushels of wheat in its milling industry and 160-170 million or more bushels of feed grain in its animal feeding industry. Of the over 900 million bushels of grain over 850 million is cereal grains. Removal of grain used for feed uses and for milling leaves over 600 million bushels available for other purposes.

Current activity: Utilizing funds from the Kansas Wheat Commission, grain scientists have started research directed toward identification of basic properties of wheat starch. The starch has granules of different sizes that provide opportunities for adhesives and fillers to be used in the paper industry. Chemical modification of the starches also indicate properties that may have competitive advantages when compared to corn starch. Other research has indicated that cold water soluble starches can be prepared that will provide expanded uses for wheat starch.

Need: Continued effort is needed to complete testing of starches designed for the paper industry and to complete work on modified starches. In addition other research is needed to look at potentials not investigated at this time and to investigate the potentials to expand the utilization of wheat gluten and other basic components of wheat beyond the current uses. Similar research activities should be initiated to explore expanded uses of sorghum, corn and other basic grains produced in Kansas.

4-1-86 Sen. Ag.
attachment 2

WHEAT UTILIZATION: NONFOOD AND NONFEED USES

Paul A. Seib, R. Carl Hoseney, Jon M. Faubion, and Arthur B. Davis
Department of Grain Science and Industry

Except for a very small amount of feed wheat, domestic use of Kansas wheat is predominantly for food. Kansas wheat is dry-milled into flour, farina, germ, and bran. These dry-milled products are heterogeneous mixtures of biochemicals, which limits their use. They cannot be modified to products of high value, because dry milling cannot be controlled when starting with raw materials of mixed composition.

Wet-milling of wheat and wheat flour allows the separation and purification of products of singular composition. The objectives of this research program include the following:

A. To investigate the wet-milling of wheat to separate efficiently gluten, starch, germ, bran, and wheat gums.

B. To develop methods of drying wheat gluten that do not denature the protein.

C. To evaluate the properties of wheat gums, including thickening and gelling power.

D. To prepare modified wheat starches that may find uses in the paper industry.

Wet-Milling of Wheat

The efficient separation of starch from the other components in wheat is the main factor influencing the cost of wheat starch. The first step in wet-milling of wheat is the steeping of grain. The purpose of steeping is to hydrate the structure and weaken the bonding forces between the various components in the kernel. After steeping, wet grinding of swollen wheat should release starch granules, gluten protein, cell walls, bran, wheat gums, and germ. Then those components can be separated by sieving and centrifugation.

We have used light microscopy to examine the effect of steeping-water pH on the structure of the kernel. Steeping of wheat was studied at pH 8.5, 8.0, 5.5, and 4.5 in excess water. The results of the microscopic study show that a 24-30 h steep at pH 4.5-5.5 may be optimum for separation of starch from nonstarchy components. Small-scale wet-milling of wheat is underway to confirm the pH for optimum separation and purification of wheat starch.

Drying of Gluten

On a per unit weight basis, gluten is the most valuable component of the wheat kernel. In the commercial production of gluten, the product must be dried. The temperature used during drying usually results in gluten that no longer has its complete functional properties. That is, some of those properties are destroyed by heating. To learn to dry gluten with little or no

loss in properties, thus retaining its optimal value, we must understand how heat damages gluten protein. Heat damage of protein is generally called denaturation, which is thought to be an unfolding of protein molecules. Wheat gluten, however, has been shown to be a random polymer and, thus, is not unfolded by heat. Instead, wheat gluten is apparently polymerized when heated. The polymerization takes place by a disulfide interchange reaction. Reversal of this reaction results in an undamaged protein. The polymerization reaction appears to start at about 60C. Thus, to avoid damage to gluten, drying must be done below 60C. Methods to prevent the polymerization of gluten during drying are being devised.

Polysaccharides or Wheat Gums

Water-soluble pentosans in wheat flour have the capacity to gel upon the addition of certain oxidants. Such gels could be useful in desserts, meats, and bakery foods. Concentration of the water-solubles from wheat flour greatly affected the increase in viscosity and gelation reaction. Gelation was also affected by the time between when flour was wetted and when the solubles were removed. Maximum gelation occured after 2 hours of rest. These data infer that an enzyme system is converting insoluble pentosan in wheat dough into soluble pentosan. When the soluble pentosan was allowed to set after separation, the gelation reaction was impaired. This infers that the enzyme mentioned above or perhaps a separate enzyme degrades the water-soluble pentosans. In addition to the enzyme associated with the wheat gums, there appeared to be an ethanol-soluble inhibitor of gelation in certain wheat flours.

Starch

A disadvantage of wet processing of wheat is the inefficiency of wheat starch isolation, which makes wheat starch more expensive than corn starch. However, when wheat is wet-processed for gluten, the major product of the mill will be starch. Finding more uses for wheat starch will broaden its market potential and will increase its value now and in the future.

Table 1 shows that the major user of starch is the paper industry. Corn starch is most often used because of its low price. Wheat starch has some advantages over corn starch but only in solid form or in a gel state.

Table 1. Major Uses of Starch*

Use	Millions of lbs 1982	1984
Brewing	142	187
Pharmaceuticals, Chemicals	159	185
Paper/corrugating	2,491	1,641
Building/textiles	229	277
All Others**	979	1,210
TOTAL	4,000	4,500

* From: P. A. Mayer, Milling and Baking News, November 26, 1985, p. 18.
** Includes approximately 200 million lbs of food starch.

Starch is used in papermaking and as an adhesive in paperboard manufacturing. In papermaking, cationic starch derivatives are popular in the wet-end of the paper machine, where they reduce the loss of fines when the paper sheet is first formed. Moreover, cationic starch imparts wet-strength to the final sheet. Cationic or positively charged starches are also used to size paper two-thirds of the way through the paper machine. During sizing, a paste of the cationic starch helps to glue down loose fibers on the surface of the sheet and fills pores. The use of starch in the wet-end and for sizing accounts for over three-fourths of the starch consumed by papermaking.

For those reasons, we prepared a cationic wheat starch to compare with a cationic corn starch. We found that the cationic wheat starch adhered to cellulose fibers as tenaciously as cationic corn starch. The two modified starches appear interchangeable for papermaking. Test runs on papermaking equipment are planned at the Department of Paper Science, University of Miami, Oxford, Ohio.

Instant starches that thicken and gel when mixed with cold water are of interest to any commercial user of starch who must cook the starch prior to use. Cold water-soluble, granular starches have become available commercially in 1985 in the United States. We decided to study the mechanism of formation of the new cold water-soluble corn starch, and to determine if the process worked on wheat starch.

The results of our work revealed a new physical state of the starch granule. Prior to our work, only the native starch granule had been identified, and its structure determined. Furthermore, we found that wheat starch readily forms cold water-soluble granules. The key change that creates a cold water-soluble starch is the transformation of the double-helix starch crystal in native wheat starch to a single-helix crystal.

The key to expanding the large-scale uses of wheat starch is to capitalize on the differences between the properties of wheat and corn starch. Compared to corn starch wheat starch melts and pastes at a lower temperature, is comprised of disc-shaped granules rather than spheres, and is more white. In using starch in plastics, paper and paper board, the melting and pasting of wheat starch at lower temperature may permit more rapid processing in existing equipment. The small wheat starch granules may be more cost effective by adhering to surfaces better than larger granules, which would allow reduced levels of small granular wheat starch to be used. When starch is used as a filler in plastics its whiter color may be advantageous to give brighter colored products.

JAN 2 4 1986

Date : December 13, 1985

To : Dr. Walter W. Woods, Dean
College of Agriculture
Waters Hall 115
Campus

From : Dr. C. W. Deyoe
Department of Grain Science & Industry

Subject: Reference to letter from Edward Seaton. Proposed research on grain to add value.

Introduction

The two largest grain crops in Kansas are wheat and grain sorghum. The annual production of wheat is $\sim$ 400 X 10^6 bushels and sorghum $\sim$ 250 X 10^6 bushels. Practically all of Kansas wheat is used in food, whereas sorghum is used in feed. A major portion ($\sim$ 65-75%) of Kansas wheat must be exported since domestic consumption amounts to only $\sim$ 25% of the crop. A very small amount of sorghum is exported from the U.S. for feed use elsewhere.

The large surplus of Kansas grain will continue into the twenty-first century. Increased yields per acre can be expected from new grain varieties presently being developed in traditional plant breeding programs. Furthermore, quantum leaps in yield can be expected from the genetic engineering of plants, if the efficiency of photosynthesis can be increased, nitrogen fixation can be introduced, and pest control and herbicide resistance can be built into wheat and sorghum. Unless surplus grain is processed into products of high value, Kansas and the United States will become more like a third-world country that exports raw materials, and imports high-technology goods.

The predominant amount of wheat used domestically is dry-milled into flour, germ and bran. Those dry-milled products are mixtures of protein,

carbohydrate, fat, fiber and ash. The mixed composition of those products limits their use. They rarely can be modified into products of high value, since the modification process cannot be controlled when the starting materials are not of singular composition.

Wet-milling of wheat flour does provide products of singular composition, such as protein and starch. At present, the main objective of the wet-milling wheat flour in the United States is to obtain vital wheat gluten for use by the food industry. The major product of wet-milling, however, is wheat starch. Wheat starch has found limited use, mainly because corn starch is less expensive. Wheat starch in its native granular form does have some advantages over corn starch, which gives wheat starch some unique uses. However, the differences between wheat and corn starch disappear when the starches are heated in water to give molecular dispersions. The large-tonnage users of starch use starch dispersions, and they buy the least costly starch, which in the United States is corn starch. More efficient methods are needed to isolate gluten, starch and other pure materials from wheat. Speciality uses must then be developed for wheat starch and gluten to increase their value.

The principal advantages of wheat starch vs corn starch are a white surface, ease of cooking, different sized starch granules, a tender gel, and compatibility with existing formulas for bakery foods. Furthermore, the protein (gluten) isolated when wheat starch is produced has unique properties that make wheat gluten much more valuable than corn protein.

Dry-milling of sorghum grown in Kansas gives hard flinty particles that are difficult to cook in foods. Thus, sorghum varieties presently grown in Kansas are unsuitable for domestic food use, and for food use

in export markets in China. India and countries in Africa. Wet-milling of sorghum has been discontinued in the United States. The yields of starch are lower from sorghum than those from corn, and the contaminating protein in sorghum starch is higher. New varieties of sorghum should be developed for Kansas that are suitable for food and for wet-milling.

Objectives

The broad objective of the proposed research program is to identify new uses for wheat and sorghum by separating the components in wheat and sorghum, and, where necessary, to modify those components by physical, chemical or biochemical means.

The specific objectives include:

(1) To find efficient methods to wet-mill wheat into starch, protein, germ, bran and other minor components, and to subject the separation methods to engineering, ecological and economic analyses.

(2) To modify wheat starch for use in food, paper, plastics and other industries uses.

(3) To modify wheat gluten to improve its dispersibility, water-binding capacity, adhesion to meat, and to creat a foaming protein.

(4) To identify new varieties of sorghum useful in food and wet-processing.

Significance

High-technology should be applied to wheat and grain sorghum to expand or to creat new industries in the State of Kansas. Wheat and grain sorghum are re-newable Kansas commodities that have good potential for add-on value. Finding efficient methods to fractionate wheat into starch and gluten will reduce their cost and increase demand. Modified

wheat starch and gluten should find unique uses in a wide array of products since they differ from other starches or proteins. It is likely that new products would be made in Kansas near the supply of wheat. Since water is necessary to wet-process wheat or sorghum, new facilities would be located near rivers or large reservoirs. Presently, modern wet-process mills have closed water systems that require make-up water only.

In the United States approximately 5% of wet-milled starch is used in the food industry (Table I), even though that market has the largest add-on value among users.

MAJOR USES OF STARCH

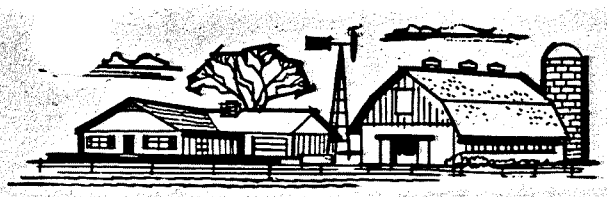
	(Millions of lbs)	
	1982	1984
Brewing	142	187
Pharmaceuticals, Chemicals	159	185
Paper/corrugating	2,491	1,641
Building/textiles	229	277
All Others*	979	1,210
Total	4,000	4,500

*Includes approximately 200 million lbs of food starch.

P. A. Mayer, Milling & Baking News, Nov. 26, 1985, p. 18

It is likely in the years ahead that more and more starch will be used to produce paper, chemicals. pharmaceuticals, and plastics. Wheat starch and its derivatives will most likely find their unique uses in those industries. In the long run, if the photosynthetic efficiency can be improved in the wheat or sorghum plant, power alcohol might be competively produced from those grains. Then, wheat and sorghum would contribute to Kansas needs for food, clothing, shelter, and transportation.

The development of new varieties of grain sorghum that are more compatible in food would broaden that grain's export and processing markets. Moreover, if the new varieties gave improved starch yields, sorghum starch from Kansas might compete with corn starch in a wide array of products, including sweeteners, modified starches, maltodextrins, to mention but a few.



Kansas Agri-Women, Inc.

organized in 1973 as United Farm Wives of America

"From Producer to Consumer With Understanding"

SENATE AGRICULTURAL COMMITTEE

Senator Jim Allen, Chairman
April I, I986

Senate Concurrent Resolution No. I640

Presented by Marge White:Legislative Representative-Kansas Agri-Women

Mr. Chairman and members of the committee, I'm Marge White, Legislative Representative for Kansas Agri-Women. Kansas Agri-Women is the Kansas affiliate of American Agri Women. We are indeed proud and honored to have in our membership, Jeanne Mertz who was elected to lead American Agri-Women last fall in Phoenix at their national convention.

Kansas Agri-Women was chartered in 1973 as United Farm Wives. That was the year the first red meat boycott reared it's ugly head and the need to educate the American consumer became apparent. We now represent women from all aspects of American Agriculture and Agri-Business-hence the name change to Kansas Agri-Women.

Under Purposes and Objectives of our organization is:

PROMOTE an educational program that advances the interest and welfare of members and the general public.----------. PROVIDE funds necessary to carry out this program.

So we feel it is not only fitting but imperative that we speak in favor of Senate Concurrent Resolution No. 1640,which states the needs for priorities in Agricultural Research by our universities. As the resolution states, Kansas has become a leader in the production and milling of wheat, due to our scientist at Kansas State University. Using this valuable resource we need not only continue this research but look further into non-food--non feed uses of wheat and grains. We especially call your attention to the funding of researsch that would enhance the existing or new industries that manfacture value added products, such as new crops.

These are not new ideas. I have attached a PRIORITIES IN AGRICULTURE RESEARCH paper given to the joint House and Senate Ag Committee in 1983, at Kansas State University by Viola Dodge. Viola,(a member of our organization who I'm sure many of you know) couldn't be here today due to major surgery.

In closing--We in Agriculture, still the economic foundation of our State, urge the Committee to fund the Research Projects at Kansas State University. This action will benefit not only Agriculture, but the economic development of the State of Kansas as well.

Thank you for the opportunity to express our thoughts before this committee----------Marjorie White

Atch. Dodge

4/01/86 Sen. Ag. attachment 3

an affiliate of American Agri-Women

given to the joint House & Senate Ag committees in 1982 at [illegible]

Priorities in Agriculture Research

I am Viola Dodge, a farm wife from Olsburg, Kansas. On behalf of the United Farm Wives I appreciate this opportunity to express our views as to the priorities in Agriculture Research which should be set by the university.

We would like to see the field of new plants be given high priority.

American agriculture is in deep crisis, we are approaching the end of cheap water, labor, capital and energy. We are approaching the threshold of a new kind of farming in which fields need be cultivated in crops, not only for food, but to also keep this country's factories operating and for national defense. We need to develop new crops to serve as fuel, industrial or pharmaceutical purposes and for defense.

Our Agriculture Research is the envy of the world but many people believe that the universities continue to research the same thing, that is, production. We now need to adjust the priorities to other future needs.

Recently Dr. Marc Alley a research agronomist at Virginia Polytechnic Institute has recorded a 1982 wheat yield of 111 bushels per acre, three times that state's average. What would we do with three times the crop yield of wheat? We already have a surplus. This type of research is wonderful and should be continued however it should not be given top proirity. We now need to adjust our research priorities to uses of our surpluses and to new plants for other uses.

Probably every university has new seeds on the shelf in need of research. After all the soy bean seed has been around for 5000 years but has only been developed as a crop in the last 40 years. The Agriculture Department Northern Regional Research Center in Peoria has been studying new crops for defense for the last decade. (New crops for defense are those which now come entirely or mostly from foreign countries and that yield such unedible products as rubber.)

(Higher petroleum prices, increased demands on traditional resources, world politics and new resource needs have generated new demands for agriculture sources of many different kinds of raw materials.)

The American Farmer should be cultivating petrochemical industry feed stocks. Eventually we will run out of oil. We must look to renewable energy sources. When alcohol fuel was introduced a few years ago it was said, by the university, that it was not feasible to produce. The only reason being that there was a lack of research in the use of its by-products. If you were to visit the Staley plant in Decatur Ill. and see their expanding alcohol production you would agree that it is feasible and profitable. Today, most of our unleaded gasoline contains alcohol, this is the easiest way to increase the octane rating. I don't know if alcohol is a by-product of syrup or if syrup is a by-product of alcohol but it must be profitable to produce both. One of the best plants which could be used for alcohol production is the artichoke, are we doing any research with it?

Richard Harwook, Director of the Rodale Farm Research Center believes the rising price of natural gas will transform agriculture irreversibly "since 1972 the price of agriculture nitrogen has gone from 3¢ a pound to 25¢." The farm institute says that by 1986 the price will go up to $1.

Dodge

By 1990 natural gas no longer will be a source of nitrogen fertilizer. Will we then become dependent on imports from developing countries where natural gas is freely flared for the lack of plants to capture it? Or, will we go over there and build their plants so that we can buy it back and further decrease the balance of trade? At 25¢ a pound for nitrogen Harwood says it is already cheaper for the farmer to produce his own biological nitrogen with legumus plants grown between seasons as is now being done in Delaware.

We use ¼ of the world's supply of natural rubber. It is a critical component in military machinery, particular air craft tires and engine mounts. Current national defense stockpile requirements call for 850.000 tons of natural rubber - only about 119,000 tons have accumulated.

The Guayule (Wy-oo-lee) plant, a semiarid shrub, produces chunks of natural rubber in its leaves and roots. Will it grow in Kansas? After this summer I like that word semiarid plant.

United States imports about 100 million pounds of caster oil annually for use in industrial cooling and lubricants. The best replacement for caster oil here is Lesquerella, a member of the cabbage family. It is said to have good potential and could quickly develop. Can we grow it here?

Jojobe (Ho-ho-be) is already in limited production, it has been identified by agriculture research as capable of producing lubricants for jet engines which previously were available only from sperm whale oil.

Crambe and Meadowfoam are plants which could be a replacement for rape seed oil used as a lubricant in steel rolling, as a plastisizer and as an anti foaming agent in detergents. Crambe will grow almost anywhere and is ready for American Agriculture. Have we tried it?

Once the values of new seeds and their potential as a crop is determined and the scientific papers are published, it is largely up to private industry to get the crop launched, this is done by contracting farmers and thus guaranteeing them a market. The contracting proceedure was used to introduce sunflower seed to the midwest farmers.

It is imperative that the research of new plants be given high priority. MORE RESEARCH WITH NEW CROPS was one of the ideas to be pursued by the Agriculture Summett Conference which met in Washington D.C. in July.

We would like to see more of this type of research here at Kansas State University.

Viola Dodge.

Mr. Chairman, Members of the Committee:

My name is Jeanne Mertz. My address is Route 3, Box 260,Manhattan. I am here today to speak in behalf of American Agri-Women, a national coalition representing more than 35,000 farm, ranch and agri-business women across the United States.

American Agri-Women supports Senate Concurrent Resolution No. 1640. We believe it is absolutely necessary funds be appropriated for research to develop industrial products from grain such as wheat. It is imperative new uses be found for wheat and other grains in order for the excessive surpluses to be eliminated.

We are encouraging our membership to consider alternative crops as an option. It is our philosphy that we in agriculture must attempt to solve our problems ourselves - rather than depending upon someone else to tell us what we can do or how we must do it. Perhaps we need to reach back into the past and find the same strengths our pioneer forefathers had when everything they attempted was new and untried.

It seems unlikely prices we receive will become profitable until there is a better balance of supply and demand. To accomplish this, some of us are going to have to experiment with alternative crops. They could be fruits, vegetables, tree crops or non-traditional grains. They would be planted on land now used for traditional crops. This would help to eliminate surpluses.

Crops for industrial uses are another option for consideration. These are decisions people in agriculture must contemplate. But its like the chicken and the egg. Do you plant an alternative crop and when its time to harvest, look for a market or do you develop a market and then plant the crop? Not too many farmers I know could afford to plant a crop if they didn't have a market available.

This is why it is so important the Legislature emphasize marketing in this Resolution. It will not only encourage farmers to try alternative crops, it will stimulate economic development that in turn will help our state. This Resolution is a progressive step forward not only for Kansas farmers, it will stimulate growth in the business community as well.

I have appreciated the opportunity to express my concerns.

Respectfully submitted:

Jeanne Mertz

Jeanne Mertz, President
American Agri-Women

April 1, 1986

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KANSAS GRAIN & FEED DEALERS Association

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*GARY GILBERT, President, Morganville
*GEORGE AICHER, First Vice-President, Eureka
*GARY COOPER, Second Vice-President, Colby
TOM R. TUNNELL, Executive Vice-President, Hutchinson

STATEMENT OF THE

KANSAS GRAIN AND FEED DEALERS ASSOCIATION

TO THE SENATE AGRICULTURE COMMITTEE

SENATOR JIM ALLEN, CHAIRMAN

REGARDING SCR 1640

APRIL 1, 1986

Mr. Chairman and members of the Committee, I am Chris Wilson, Director of Governmental Relations of the Kansas Grain and Feed Dealers Association and am representing our 1100 member firms here today. We strongly support SCR 1640.

As you are well aware, agriculture is the State's largest industry, and wheat is our leading crop. Not only are wheat producers and agribusinessmen dependent on its production and marketing for their livelihood, but thousands of others in Kansas derive their income through its processing, transportation, and sale of wheat and wheat products. In all, it accounts for roughly a $9.2 billion industry--a vital segment of the State's economy.

Of the 400 million bushels of wheat produced each year in Kansas, only about 11 million bushels are consumed here. The successful processing and marketing of all those 389 million additional bushels, both domestically and internationally, is critical to the prosperity of the Kansas wheat industry complex. As wheat production and competition continues to increase worldwide, Kansans must remain on the cutting edge of technology in efficient, low-cost production, in crop quality, and in product utilization.

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In order to meet and further stimulate demand for what we produce, we must develop new, value-added uses for our wheat. This makes the wheat we produce more valuable and thus more profitable for the farmer, and also provides many more jobs throughout other segments of our State's economy. This is a long term effort, but it can never be disregarded in the short term. We view this as a very positive step for the future of Kansas agriculture.

We commend the sponsors of this resolution for their foresight in proposing it, and we appreciate the Legislature's efforts in this area in the past. In the current agriculture economic climate, it is easy to become caught up in only the immediate situation. But we must at the same time look to and prepare for the future by taking steps to enhance the profitability of Kansas agriculture in years to come in whatever ways we can. Obviously, research to find new uses for wheat will not solve all of agriculture's problems, but its potential for being of great benefit should not be underestimated.

We would also commend Kansas State University's Grain Science and Industry Department under the leadership of Dr. Charles Deyoe for their enthusiasm and dedication in this area. We beleive the results of their research to date are exciting and promising, and that if the Legislature provides the funding requested in SCR 1640, you will see very tangible results in a very short period of time. KSU's research on new uses for wheat is the only such effort in the country.

In 1984, the U.S. Department of Agriculture, under the leadership of former Secretary John R. Block, recognized the importance of new, value-added product research, and resumed its efforts in this area after a period of

having shifted away from new uses to nutrition research. USDA's Agriculture Research Service today emphasizes a balance between production and product utilization research. USDA's Northern Regional Research Laboratory has the major responsibility within the Department for the development of new uses, but is only working with corn and soybeans. Thus, wheat uses research is dependent on the experiments being conducted at Kansas State.

In this time of stressing economic development in our state, I can think of no better investment than in the development of industrial, nonfood, nonfeed uses for wheat, which will benefit so many segments of the State's economy. Also, there is activity at the national level to create an entity to provide risk capital in this area and to assist in the commercialization of new products and expedite their entry into the marketplace. It is important that Kansas is positioned to take advantage of such opportunities.

I will attempt to answer any questions you may have. Thank you.

KANSAS ASSOCIATION
OF WHEAT GROWERS

SENATE COMMITTEE ON AGRICULTURE

Chairman, Senator Jim Allen

Tuesday, April 1, 1986

Senate Resolution 1640

Mr. Chairman, members of the committee, I am Howard Tice, Executive Director of the Kansas Association of Wheat Growers. I appreciate this opportunity to offer the support of Kansas wheat producers to this resolution.

We are all aware of the financial difficulties agriculture is experiencing in our state, and across the nation. Much of the problem is due to lower export sales which have added to the surplus of wheat and other U.S. produced grains.

There are several reasons why our export sales have dropped. It seems that the primary reasons are political, on the national level. I won't go into those various reasons, because you all know what they are. You are also, no doubt, aware of the grain quality and classifications issues, and their effect on export sales. These are real problems that lower our competitive position in the world market, no matter what the price. We are working on these problems through various means, and we hope to be able to report in the not too distant future, that positive changes have been worked out, and we will be able to compete once again.

In the meantime, we must continue, not only those efforts, but research into other ways to use the grain we produce. The federal government's approach, which seems to be to simply lower the number of farmers in order to lower surplusage is not only an unrealistic approach due to the number of farmers who must now compete in an already overburdened labor force, but it is short-sighted in that it may very well leave us short-handed on the farm in the future, as the population growth increases the need for food.

It makes a lot more sense to keep a reasonable amount of production in place, and research other uses for our grain that can be utilized to lower the surplus, and offer other benefits to our citizens at the same time. The non-food/non-feed research program at KSU is a perfect example of that type of research.

As Steven Graham has told you, Wheat Commission checkoff funds were funnelled into this project without the knowledge of the commissioners who are required by law to oversee the use of those funds. As a result of that legislated drain on checkoff monies, coupled with lowering income for the Commission because of lower production, and the lack of cooperation from many feedlots in collecting the checkoff, the Wheat Commission simply cannot afford to continue to fund the project.

It is important to remember that the checkoff that funds Wheat Commission efforts is not a state tax. Although the state administers the funds, and oversees the budget, the money belongs to the farmers who pay it into a fund to be used for wheat promotion. It is a voluntary contribution in that any farmer who requests it, can obtain a refund. I believe it to be a fair statement that if Kansas farmers find out that the legislature is prempting their Commission's right to direct the use of that money, refunds will increase even more.

It has been pointed out several times in this committee, that the percentage of state tax money spent on Kansas' Number One Industry is shockingly low. Most of the bills that seek to help farmers this year carry very low price tags for the state. Considering that farmers feed our state's citizens at a loss, the use of a few tax dollars to help farmers simply transfers to agriculture, a portion of the money consumers would be paying if farm prices were at more realistic levels.

I applaud the sponsors of this resolution for recognizing the need for the state to fund this important research, and I urge the passage of Senate Resolution # 1640.

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