ABSTRACT

Less than 0.8% of the wheat hectares harvested in Kansas in 2001 were hard white (HDWH) wheat (*Triticum aestivum* L.), despite research and extension efforts directed toward facilitating its adoption. To better understand adoption constraints and augment future research and extension efforts, four focus group interviews were conducted in western Kansas. Two focus groups were farmers who planted some HDWH wheat, and two were farmers who did not plant HDWH wheat. Factors most influencing growers to include HDWH wheat in their production system included grower perception that the future direction for Kansas wheat production would be HDWH wheat, a ready supply of their own certified seed, and yields comparable to hard red winter (HRW) wheat. Obstacles to grower adoption of HDWH wheat included difficulties in segregating HDWH wheat from HRW wheat and delayed harvest due to later maturity of HDWH wheat. Complications from utilizing HDWH wheat included difficulty in cleaning equipment, grain segregation, extra seed costs, and uncertainty about yield potential and disease resistance. Limitations preventing future adoption of HDWH wheat related primarily to perceived potential economic losses relating to HDWH wheat production and other risks associated with transitioning to this different class of wheat. All focus groups indicated that lack of information was not a factor in their decisions and that they were satisfied with the amount and quality of information received from Kansas State University Research and Extension and other agencies and organizations. All groups viewed HDWH wheat as the future direction of western Kansas wheat production.

KANSAS’ IDENTITY AS THE “WHEAT STATE” came about because it leads the nation in production of hard red winter (HRW) wheat (*Triticum aestivum* L.), which became the primary type of wheat grown in Kansas and in several surrounding Great Plains states following the introduction of Turkey HRW wheat in 1874. This wheat was well adapted to the soils and climate of Kansas (Paulsen, 1998).

Many domestic and world markets, however, are exhibiting an increasing preference for hard white (HDWH) wheat. Millers’ preference is driven by the higher flour extraction rate during milling of HDWH relative to HRW wheat. Consumers seem to prefer products baked using HDWH wheat flour (Bequette and Herrman, 1994). Growing specialty market segments, including whole wheat breads, tortillas, and oriental noodles, help bolster demand for HDWH wheat (Boland and Howe, 1999), which became a distinct class in the U.S. Grain Standards in 1990.

Research and development efforts at Kansas State University, along with research at other universities and in the private sector, have increasingly focused on HDWH wheat in response to the changing market demand. Many feel that HDWH wheat should become the preferred wheat type produced in western Kansas. Several new HDWH wheat cultivars have been introduced. Lin and Vocke (1998) projected that 8 to 12% of the area of wheat harvested in Kansas in 2001 would be HDWH wheat based on planned distribution of certified seed for new cultivars. They further projected that the area planted would increase to 15% in 2002, assuming traditional adoption rates for new HRW wheat cultivars. They suggested that adoption rates were dependent on price premiums and yield advantages and may be constrained initially by limited seed availability. Similarly, Schumacher et al. (1999) asserted that producers will likely resist switching from red to white wheat production unless there are economic incentives, even though there are few, if any, differences in production costs or tillage practices.

Producers have been slow to adopt HDWH wheat despite potential market advantages. Only about 0.8% of the 2001 wheat hectares was HDWH wheat. Approximately 0.8% of the 2001 and 1.1% of the 2002 wheat hectares were HDWH wheat (KASS, 2002). However, in 2003 the HDWH wheat hectarage increased to almost 5% (KWC, 2003).

Focus group interviews have long been used to gather information about human behaviors or practices. They emphasize expression of the diverse range of opinions of individuals within the group (R.A. Krueger, unpublished data, 1984). In contrast, surveys are based on the assumption that individuals know how they feel and they form opinions in isolation. Evidence suggests that people influence each other with their comments, and opinions shift in the course of discussion (Krueger, 1988). The focus group interview has a comparative advantage over personal interviews by observing interaction leading to relatively spontaneous responses and encouraging a high level of participant involvement (Morgan, 1988). Eberle and Shroyer (1997) successfully utilized focus groups to evaluate factors affecting decisions of western Kansas producers in adopting cropping systems that include row crops in a traditional wheat–fallow region. Producers enthusiastically participated in the focus group process that allowed them to interact with and react to others in the group.

The survey and personal interview approaches require significant advance knowledge of producers perceptions. The interactive and reactive nature of the focus group interview permits participants to participate and positively alter the direction of the discussion in ways the interview designer may not have envisioned. Previous experience has demonstrated the willingness of producers to participate in this type of interactive process. Because of that willingness and relative advantages over other information gathering processes, focus group interviews were used to gather qualitative information to help identify why wheat producers have or have not chosen to in-

Abbreviations: HDWH, hard white (wheat); HRW, hard red winter (wheat).

clude HDWH wheat in their production system. A secondary objective was to evaluate producer perception of the availability and quality of information upon which they base their decisions.

**METHODS**

Four western Kansas focus groups, each with six to eight individuals, were established. Two focus groups were producers who chose to include HDWH wheat in their production system, and two groups were producers who intentionally chose not to include HDWH. Participants were identified by county extension agents and grain industry personnel responsible for implementing their companies’ HDWH wheat contracting programs. Producers were asked to identify important factors used in their decision to produce or not produce HDWH wheat. They also discussed obstacles they had to overcome and limitations to incorporating HDWH wheat in their operations for the future. Focus group participants were asked to evaluate information sources and to offer their assessment of the future of HDWH wheat.

The focus group interview process was patterned after the process outlined by Krueger (1985). Participants were introduced to each other and given a description of the purpose of the interviews and the interview process. Groups were separately interviewed but were asked the same questions to provide continuity for analysis. Each question was addressed to each participant, and all were encouraged to participate while limiting domination by any one individual. Interaction among individuals in the group was encouraged. Interviews were limited to about 1 hour and were conducted by the same individual. Each participant also completed a brief questionnaire to provide demographic and wheat production operation information.

**RESULTS**

Overall operations were similar for both producers and non-producers of HDWH wheat. Average age of HDWH wheat producers was 46 years, while the average age of nonproducers was 45 years. The total average wheat hectares for HDWH wheat producers was 507 ha and 89.5 ha (16%) were planted to HDWH wheat. The total average wheat hectares for non-producers was 498.5 ha. The HDWH wheat producers rented 55.1% of their total farmland while nonproducers rented 55.5%. The HDWH wheat producers had an average of 1550.6 m³ of on-farm storage capacity, while nonproducers had an average of 1515.3 m³.

Most participants from both groups raise at least two other crops that comprise at least 10% of their total farm. Corn (Zea mays L.) is the most common crop, followed closely by grain sorghum (Sorghum bicolor L.). Other crops include soybean [Glycine max (L.) Merr.], sunflower (Helianthus annuus L.), dry bean (Phaseolus vulgaris L.), and proso millet (Panicum miliaceum L.). About 79% of the HDWH wheat producers do all of their own harvesting, while about 64% of the nonproducers do all of their own harvesting. The higher percentage of HDWH wheat producers harvesting their own wheat was probably due, in part, to the fact that nearly half of the HDWH wheat producers were also wheat seed producers.

**Factors Influencing the Decision to Include HDWH Wheat in the Production System**

Most producers who have decided to include HDWH wheat in their operation began on a relatively small part of their total wheat hectares. Planting HDWH was viewed as an experiment.

_I think we started last year as an experiment._

_This is our first year. We’ve talked to neighbors. Some were disappointed in it and some were real pleased. So about the only way we were going to find out was to try it a year or two to see where it is at. We are just trying it on a small scale so far. So we will see what it does after a couple years and add it up and take a look at it then._

Some decided to try HDWH wheat because they felt it is the direction wheat production is headed. They tended to take a long-range view.

_I think most everybody knows the direction is going to be to all hard white wheat so we just wanted to try some. And it did alright, so we’re going to try some more._

_I consider it as a value added product that I can grow because it’s going to be more sellable, I think, to the export countries._

_If that is what the millers are going to be wanting in several years, it might be a time to get in and at least try it._

Those producing HDWH wheat would like to see a premium paid for HDWH wheat. They seemed to recognize, however, that wheat premiums may not be likely in the long run.

_They talk about the premium involved and I do not know if that is going to be a mainstay of the program. I think market share would be a more common goal. That (premium) sure is a factor, but I do not think that is such a long-term thing that we should be looking at that as a reason to plant it._

Some producers felt that HDWH wheat may be an option that allows them to continue to include wheat as a feasible part of their production system.

_For the most part, dryland wheat, in general, is losing out in crop share. What I was looking for is something that would have more of an economic advantage, one that would keep wheat in my rotation…_  

_Wheat is part of our rotation out here, especially on our dryland production. It is part of our crop rotation along with corn, milo, or sunflowers. Maybe some of the people are not realizing the role the wheat is playing in our crop rotation from what it was even 5 or 10 years ago._

Most HDWH wheat producers were relatively satisfied with the production potential of HDWH wheat. Their initial efforts were a way of keeping their options open.

_I got started in ’90. My yields with white wheat were always equal to or better than what I was planting with reds._

_With Trego (variety), it appears maybe the yields will be equal to or better than some of the hard red winter wheats and we felt it was time to at least try some._

_Just one of those deals where you want to keep your foot in the door. You do not want to be left sitting on the sidelines. So we are planting a small acreage._
Nearly half of the participating HDWH wheat producers were also seed producers. That may be the most important single reason why those producers have begun to include HDWH wheat in their production system.

The main reason is we are into seed production. We are an Agripro associate and we are currently growing Platt Agripro white wheat this year on 160 acres. So that is the main thing, just to get a little more premium and try to get some Agripro white out there.

We are raising certified or registered seed, and when the white wheat came along we thought we better be into it at least to some degree.

Currently we have 1400 acres of white wheat. The main reason we decided to switch just about everything over was because of the contamination factors. All of it is capable of being certified or registered seed.

Factors Influencing Decisions not to Include HDWH Wheat in the Production System

The major concern of those focus group participants who chose not to include HDWH wheat in their system related to extra work and complications in cleaning equipment and managing segregation of HRW and HDWH wheats. Some producers saw adoption of HDWH wheat as a significant burden.

Right now I plant a number of varieties of hard red winter wheat, but when I am planting I run my drill down until it is almost out then I put the next variety in and I do not have to clean anything out.

I hire my wheat cut but I have a lot of different land owners and the way the government programs are you cannot just go out in your combine and cut 20 bushels and dump it in your truck and go to the elevators and say 20 bushels go to this one. You have got to weigh it separately.

We have all on-farm storage. We have to keep it segregated. That bothers us. Our custom cutter is not too excited about it because he has got to clean out his combines and trucks.

Extra effort also translated into extra cost. They expressed strong concern about additional up front costs for seed.

The economics of buying $9 to $10 wheat every year is probably a drawback to us.

Having to buy seed every year becomes a hassle. I like to use my seed for several years and then replace it rather than having to do it every year.

Seed cost was twice or three times what I had in my bin that I was going to drill. My conditions were not optimal either (dry weather). I was not going to spend money on high price seed to do that.

Producers were, however, uncertain about whether or not there were enough data and experience to show that currently available HDWH wheat cultivars will consistently yield as well as the HRW wheat cultivars they have been using.

First off, it will have to be proven to me it is as good as the wheats we have now, not only in yield, but disease resistance and drought resistance. It is going to take several years of history before I am willing to try that.

Need some data that has been compiled over a few years that would at least convince a fellow that you’re not hurting yourself in planting white wheat.

Given the extra work, cost, and risk, those farmers felt that there simply was not the necessary price incentive for them to add HDWH wheat to their production system.

Where is the incentive to grow this wheat out here?

There just really is not enough incentive to take the extra risk. By the time you add it all up there is more expense than benefit coming back.

Unless there is a significant economic advantage it is hard to justify going to the extra effort. We’d just lose our money in what we know.

Obstacles HDWH Wheat Producers Have Had to Overcome

Participants who include HDWH wheat in their production system were asked to describe obstacles they had to overcome in deciding to include HDWH wheat. The HDWH wheat producers viewed segregation of HDWH wheat from HRW wheat as perhaps the greatest obstacle to future production. The problem related not only to cleaning of equipment, but also to efficient use of storage and transportation of grain.

Cleaning out the combines and the trucks. We understand why we should keep it pure so that is a problem, though I think it is something we can live with. And it will become less if it is half, or 3/4, or all of my acres; the problem becomes less as we adapt to more white wheat.

Keeping white wheat pure regardless of whether you are raising it for seed or milling—that is one of the biggest problems. Probably have to be raised by people who harvest their own wheat. You are not going to get many custom machine operators to clean up their machines to avoid contamination. The other thing would be the storage.

You have to have farm storage. In my case I need all of my storage space for my milo crop. So mine has got to be moved by the first of September so it does not create scheduling problems after that. If you have got a 10 000 bushel bin and you have only got 6000 in it, you cannot put anything else in it. So there went 4000 bushels of storage.

Producers also perceived that HDWH wheat matures later than the HRW wheat cultivars they also were using, thus causing problems at harvest.

We have a custom cutter cut all our wheat—we do not do any wheat harvesting—and the white wheat was 5 to 6 days later than our red. If you have got a custom cutter they are not likely to set here 5 to 6 days waiting on white wheat to get ready unless there is a tremendous amount of acres. So that caused me some problems last year.

My white wheat was later last year. It was about a week later when I harvested it. But I understand that, I put the blame on planting it that much later. We put it in after corn. That affected it, too, but still it was a week later.

Although most participating HDWH wheat producers are also seed producers, they were concerned that higher seed costs presented an obstacle to HDWH wheat adoption.

One of the first obstacles is cost of seed vs. yield and our premium has not offset that yet.

The big thing is the cost of seed.

Mainly the cost of the seed compared to the premium we receive for it.
The HDWH wheat producers interviewed did not have an extreme concern about HDWH wheat yields. However, because of difficulties in segregating HDWH from HRW wheat and higher seed costs, they felt that the lack of a price incentive was an obstacle in moving to the next level in production.

We are going to have to realize some kind of incentive on the financial end to grow it on a very large scale.

If we are going to have to raise it for the same price of the red it will not work; people are not going to go through all that trouble to raise it for the same price. It needs to carry a decent premium, I believe, before we see it really get going.

**Limitations Likely to Discourage Future Inclusion of HDWH Wheat in Production System**

Participants who have not yet included HDWH wheat in their production system were concerned about segregation of HDWH and HRW wheats.

Mainly it is just the segregation that you have to keep because we plant different wheats all the time.

On my farm I am the labor. I am everything. If I have to stop to clean combines, and clean trucks, and clean augers, I cannot do it. Segregation is a real problem for me.

We have limited farm storage. We have several bins, but they are large ones. You have got to commit the whole thing. Until there is enough acres for the elevators to justify segregating, we probably will not be able to do anything.

Surprisingly, segregation was not the most important issue to most of those not producing HDWH wheat when compared with those already producing HDWH wheat. Nearly all of them expressed concern about the relative productivity and profitability of available HDWH wheat cultivars.

If there is a little bit of a reward there I am going to do it. It is going to have to be proven that it can yield year after year with our red winters before we make a firm commitment to it.

That was one thing that concerned us with white wheat. Will the advanced genetics really make us money over the next 10 years? Like my father-in-law says, we are not an experiment station.

We found over the years, as far as varieties go, we have been big on Tam 107 (HRW wheat) and we have gone to Jagger (HRW wheat) for the protein. But if we average over the last 10 years, in hail storms, the Tam 107 will stand out there in the field and stay together and the high protein wheat will be all over the ground. So if we average everything out over the 10 years, the wheat that nobody wants will make us more money because we can put it in the bin and pick up our LDP.

The HRW wheat producers’ greatest concern was whether there will be an adequate economic incentive to move toward HDWH wheat production in the future.

Primarily economics. In any side of your operation you do not go changing the way you have been doing things unless it is economically feasible.

Until we see an advantage price wise or yield wise, or until the industry is offering a huge incentive... If we were all going to change and switch and we are delivering to an elevator and get the premium, that would be different.

**Information Sources**

Participants were asked to describe the primary information sources they relied on making decisions relating to including HDWH wheat in their production system. Both HDWH wheat producers and nonproducers were similar in their responses. All producers indicated that the foremost information source was university research-based information that they acquired by seeing field trial information, attending field days, attending extension meetings, through direct communication with researchers, and reading extension publications or viewing them on the Internet.

I have watched a lot of K-State test plots and it is the old deal, you try to find the variety that works for your operation.

I rely a lot on the K-State publications and their research and attending meetings where you hear people talking about what is happening in the wheat industry and what varieties are coming along.

We really watch the Colby experiment station on yields, but we like to get at least 7 years on a crop before we really do it and if it will stay in the top third we like to use it.

However, most participants, both HDWH and HRW wheat producers, stressed the overriding importance of watching what their neighbors were doing. Although producers saw university research and extension as an important source of information, they were more likely to try HDWH wheat as a part of their operation if they saw their neighbors having success with HDWH wheat.

I think neighbors are probably the ones I respect the most 'cause I know what their farming is like and the soils are like and what the conditions were when they harvested.

I prefer to see what a neighbor is doing, not as a test plot, but on his own. That has quite a bit of weight.

I think it needs to be something that’s done here, locally, whether it’s your neighbors or yourself on a small scale. It needs to be a little more localized for me to be 100% convinced of that information.

Producers who have included HDWH wheat in their operation also relied, to some extent, on what they have heard from wheat industry organizations.

U.S. Wheat Associates was one major force. They told us we could more-or-less have a corner on the market if the white wheat market took off.

KCIA (Kansas Crop Improvement Association), some of their information, and basically talking with elevator type managers and industry.

Originally, it was a lot of information from AWWPA (American White Wheat Producers Association) and the annual meetings, because they would always have an industry speaker there. Of course, they were always talking about how much better white wheat was for the mill and I just kind of thought it looked like that was the future.

The HDWH wheat producers and nonproducers relied on traditional information sources, such as farm magazines and other periodicals. The internet was viewed as another important information source. More than 90% of the participants had access to the internet. Of those with internet access, about 40% identified it as important and were relatively heavy users.
I have done some research on the internet through K-State and neighboring universities to see what K-State peers are saying and what the movement up in the market will be. Mostly K-State performance pages on the internet and I will go over to Nebraska and Colorado and see how it compares over there and you can see how white wheat varies from region to region on yield and varieties.

Another 40% of participants with internet access used it some. Often producers felt they just did not have time. This group of participants complained of slow access in some rural areas.

We are on the internet but it is a little disappointing to me. Our access will vary so much: I get so flustered that I want to shut it off and go read a magazine.

Finally, about 20% of the participants with internet access used it very little or not at all.

Quality of Information

Both producers and nonproducers of HDWH wheat expressed general satisfaction with the availability, quality, and timeliness of information.

The information, in my opinion, has been quite adequate. If you want it, you can find it. I am happy with the information I have received.

It is all available and most of it is timely.

The information is there. If I have a real question, I just contact my extension agent and he gets me publications and I can sit down and read them at my leisure.

All of that information has been good as far as varieties in general. We always seem to know the data years ahead of time. So the quality of it is real good and timeliness is real good.

Producer Perceptions of the Future of HDWH Wheat

Focus group participants were asked to offer their opinions as to the future of HDWH wheat in western Kansas. Both producers and nonproducers of HDWH wheat were surprisingly similar in their responses. Most of them saw HDWH wheat as the future direction of western Kansas wheat production, although HDWH wheat adoption may take some time.

I have had breads from white wheat and I was impressed. I think it does taste better myself. I still think this is wheat country and I think white wheat has a great future. But when I go to it I want to make sure it pays its way.

From what I’ve heard, because of the advantages, it’s only a matter of time.

It is a time thing. It is coming. It is just a matter of whether it is 5 years down the road or is it 10, or what.

I think we are headed to basically all white wheat in this part of the country.

If the market is there the farmers in this part of the country will cover them up with white wheat so fast their heads will swim. The future of white wheat is there. Just a matter of when and how.

Most participants agreed that, given what they perceived as the direction of research programs, producers may not have a choice in the long run.

Eventually we will change to white wheat ‘cause Kansas State’s breeding program is basically white wheat now and Agripro's into a lot of white wheat research.

Like in any other situation, certain guys will jump on the boat the first day it goes by, and there is going to be other guys that swim along behind it from now to doomsday. It is going to be what the market demands and hopefully what is feasible and more profitable for the farmer.

I think we already know that the demand is going to be there because white wheat has better milling characteristics and other characteristics. We have just got to come up with a variety that will yield as well as the other ones. When that occurs the switch will be easy.

There was, however, a strong feeling that producers will be taking most of the risk associated with a switch to HDWH wheat.

I think we’re being forced down that road. It is possible for us that the yields will be there, the disease resistance. That’s not something we can take the hit on just so we can sell it overseas.

I feel a little bit like we’re having the white wheat kinda jammed down our throats.

I think the farmer takes all the risks, and always has. We want it to be proven to us that it is worth planting.

In the final analysis, economic profitability will likely be the driving force that determines how long before HDWH wheat is the primary type of wheat produced in western Kansas.

It is going to boil down to economics and if the export is demanding hard white, we will grow it. No problem there. But it is economics.

I think if they get the premium up there that will help a bunch.

I think the big picture boils down to the economics of growing it and the main thing that is driving that is yield. Yield is going to be king.

Some participants were concerned about the overall profitability of wheat production and saw that as limiting the transition to HDWH wheat.

Right now it is just not affordable to grow white or red or green or whatever.

Basically the only reason we drilled wheat this year was to conserve our land so it would not blow away this winter. It is tough out here. So when people tell me you need to buy $9 a bushel seed wheat—why, if all we are doing is conserving our land so it does not blow away?

We grow a lot of wheat so we have got something to plant our milo and corn into. Money’s more in milo and corn than it is in wheat. There is still a lot of wheat but there is less wheat planted every year.

Many producers continued to take a wait-and-see attitude, however, before moving to HDWH wheat production in a big way. They simply do not plan to be in the lead.

Wheat is wheat. If you can produce it consistently, we will raise it, but there has to be a place to get rid of it. I do not think we want to be on the leading edge this time.

May be what we need is a mixed product to start with so that it does not matter. The future is probably there, just not immediately for me.

I would change in a minute if I could see some benefit in doing so. Times are tough out here. So to say you are willing to make this change right now is a pretty tough thing to do.

**SUMMARY AND IMPLICATIONS**

Most of those producing HDWH wheat were doing so on a relatively small portion of their total wheat hectares. Segregation of HDWH wheat from HRW wheat was one of the greatest obstacles they have had to overcome. Despite that obstacle they have included HDWH wheat in their production primarily because:

- Most believed growing HDWH wheat was the future direction of wheat production in western Kansas.
- They had confidence in the performance of HDWH wheat.
- About half felt including HDWH wheat in their system was necessary because they were seed producers.

The primary reasons for producers not to include HDWH wheat in their production system were:

- They perceived that growing HDWH wheat increased economic risk because of limited varietal selection; unknown long-term yield and disease resistance information; and extra cost for seed, handling, and harvest.
- They felt there was insufficient price incentive to cover perceived increased costs.
- They saw a lack of economic incentive as, perhaps, the greatest limitation to increased production of HDWH wheat.

Both HDWH wheat producers and nonproducers were satisfied with the availability, quality, and timeliness of information they have been provided by Kansas State University and industry. Information does not appear to be a hindrance to adoption of HDWH wheat. Producers did perceive, however, that breeding programs were abandoning HRW wheat while not providing enough acceptable new HDWH wheat cultivars. Availability of several proven cultivars will be necessary for many nonproducers to include HDWH wheat as a major part of their production system. Both groups seemed to agree that HDWH wheat will dominate wheat production in western Kansas in the future, if and when perceived risks to producers are outweighed by benefits. However, overall pessimism relating to wheat production appeared to be a factor in how much risk producers were willing to take in switching from HRW wheat to HDWH wheat.

**Impacts of the Study**

Preliminary results of the study have already had an impact on the HDWH wheat industry in Kansas. Kansas harvested hectares of HDWH wheat in 2003 were nearly five times the harvested hectares in 2001. This increase can be attributed to a combination of factors identified in the focus group inter-

views. Kansas producers have had additional crop years to observe the improved yield potential of the HDWH wheat cultivars, thus decreasing the perceived financial risk associated with planting HDWH wheat.

Additionally, the availability of affordable seed through contracting programs and the new HDWH wheat incentive package in the 2002 Farm Bill spurred adoption. In response to seed cost concerns expressed by focus group participants, one commercial grain company’s contract contained an option where the price of certified HDWH wheat seed was determined by the previous day’s noon temperature. As a consequence, this company increased their contracts from about 4856 harvested hectares in 2001 to 22 258 harvested hectares in 2002 and about 70 822 harvested hectares in 2003.

Though producers expressed satisfaction with information provided by the university, their input during the focus group meetings continues to influence the preparation of new extension educational material. The Kansas State University faculty developed a decision aid to help wheat producers evaluate the economic advantage of growing HDWH wheat, including the new incentive package included in the Farm Bill (www.oznet.ksu.edu/wheatpage; verified 16 Jan. 2004).

Focus group results have been used during industry strategic planning meetings. This included, for example, a decision by the U.S. Wheat Associates Director for Africa not to promote HDWH for the 2001 and 2002 crops. The focus group results were also used in helping chart an industry-wide plan of action, concerning adoption of HDWH wheat, during a Kansas Wheat Commission meeting held in 2002.

**REFERENCES**


Kansas Wheat Commission, Manhattan, KS.


