USING HIGH-TECH MEDIA TOOLS TO TRANSFER THE PRINCIPALS OF SYSTEMS RESEARCH TO FARMERS

Bill Griffith[1]
Great Falls, Virginia

INTRODUCTION

Beginning in 1981, research and extension personnel at Virginia Tech and the University of Maryland formed Intensive Wheat Management Teams. Over the next six years these Teams developed a higher yielding, more profitable and environmentally superior soft red winter wheat production system. Yields greater than 100 bu/a were achieved every year. This was at a time when average wheat yields were in the 40 bu/a range (Table 1). Intensive wheat research continues today to refine and update the system.

Table 1. Results from intensive wheat research in Maryland and Virginia and a comparison with region average yields.

	Top research yields	MD and VA ave. wheat yields
	bu/a	
1981	124	39
1982	119	42
1983	129	42
1984	140	44
1985	124	43
1986	126	44

Industry representatives, as well as extension specialists, participated on the Teams to review research results, help plan and conduct field demonstrations, and develop educational programs for the purpose of teaching farmers and advisors the management techniques necessary for successful intensive wheat production.

Most farmers have access to crop production information and the latest technological advancements. Agribusiness, extension, radio, television, computer networks, farm press, consultants, and neighbors are common sources of

[1] Retired Eastern Director, Potash & Phosphate Institute.

information. The information available over the course of a year cover most aspects of farm management from government program compliance, through crop management strategies and marketing tips. A question arose, however, as to the educational approach which should be used to transfer a completely new, more intensive crop management system to the farmer. A cropping system which requires farmers to use *"different"* and more precise management techniques than had been used in the past.

KEY STEPS FROM RESEARCH TO IMPLEMENTATION

Field Demonstrations:

Based on the consistent yields achieved in research, the Teams initiated educational programs in 1984 with demonstration farms. On these farms, field-size equipment was used to test the new intensive wheat system in comparison with the previous management practices being used. Demonstrations conducted from 1984 through 1991 proved that the success achieved in research could be transferred to the farm. The demonstra-tions became an excellent training tool for early-adapter farmers and agribusiness/extension advisors. Yield advantages up to 50 bu/a in favor of the intensive wheat management system were common. The demonstrations were used by extension and agribusiness as a basis for farmer meetings, field trips, news releases and other publications.

The Teams, along with extension and industry, were able to provide the cooperating farmers with direct, first-hand help with adjustments necessary for successfully implement-ing an intensive wheat production system. It was learned quickly that the most successful demonstrations were those where all components of the intensive wheat production package were given consideration and used where appropriate.

While the principles of intensive wheat management are fairly standard throughout the soft red winter wheat growing region, site specific adjustments are needed on each farm, and even on each field. Farmers were being introduced to new management techniques such as tramlines, planting by seeds per foot of row, and learning to time decisions by growth stages rather than calendar date. Field demonstra-tions were very successful when close supervision was available from Team members. Could such an intensive production system enjoy widespread acceptance by farmers with less direct supervision?

Intensive Wheat Management Clubs:

Extension specialists and local agribusiness dealers took the leadership in forming Intensive Wheat Management Clubs in Virginia. These clubs provided members, with similar interests, an opportunity to exchange ideas and strive to meet the challenging yield goals established in

research and demonstration. The Clubs had a formal agenda with meetings on a regular basis. Meeting topics were selected on the basis of wheat management decisions the farmer would be making in the next few weeks. Publicity given to the successful results achieved by club members drew attention to intensive wheat production and influenced other farmers, especially those in the same or surrounding counties, to consider implementing intensive wheat management practices.

The results from one Club in Virginia for one year is shown in Table 2. Yield, profit and environmental advantages are apparent for farmers using the new wheat production system.

Table 2. Results from a 20-farmer Intensive Wheat Management Club in Virginia.

	Intensive management	Old standard	Environ-mental advantages
Yield, bu/a	85	50	
Total production cost, $/a	206	160	
Cost, $/bu	2.43	3.19	
Acres needed to produce 5,000 bushels	59	100	41
N used, lb/a	140	105	
N efficiency, bu/lb N	0.61	0.48	0.13
N used to produce 5,000 bushels, tons	4.13	5.25	1.12
N remaining in soil after harvest, lb/a	29	40	11
Total CO_2 in crop, t/a	9.20	5.41	3.79
Total C in residue, t/a	1.51	0.89	0.62
Total O_2 released, t/a	6.69	3.94	2.75

Intensive Wheat Management Guide:

A new publication, "Intensive Soft Red Winter Wheat Production--A Management Guide" was prepared by the multidisciplinary team of scientists with support and cooperation from the Potash & Phosphate Institute (PPI), The Foundation for Agronomic Research (FAR), and other agribusinesses. The purpose of the Guide was to provide farmers and advisors with a detailed publication on the principles and management practices necessary to successfully grow intensive wheat. The manual stresses that management, not simply additional inputs, is the key to improving wheat productivity and decreasing any potential

adverse environmental impacts. The structure of the manual is intended to provide growers and advisors with management guidelines for their decision-making process which is necessary on a year to year and field to field basis.

Intensive Wheat Management Video:

A video, "Intensive Soft Red Winter Wheat Management" was developed by the team of scientists and produced by the Virginia Tech University Relations and Communications Department. PPI, FAR and other agribusinesses supported and cooperated in the video development. The video contains short training (how to) sections which emphasize the principles of successful intensive wheat production. It provides an excellent reference source to review such intensive wheat management principles as wheat growth stages, variety selection, tramline establishment, seedbed preparation, calibrating a grain drill, nutrient management, and techniques to protect yield potential through pest control and harvest management.

The manual and the video can be obtained separately, or together, in a three-ring binder from the Virginia Tech Cooperative Extension Distribution Center, 112 Landsdowne Street, Blacksburg, VA 24061-0512.

RESULTS FROM EDUCATIONAL PROGRAMS

Wheat yields are increasing as seen from statistics for Maryland and Virginia, Table 3. A rough estimation of farmers, with significant wheat acreage, who have implemented the total intensive wheat package is less than 20 percent. The 1995 yield results from two of those farmers are shown in Table 3. It is estimated that approximately 70 percent of the Virginia farmers have adopted the split nitrogen recommendation. A large majority of farmers are doing a better job of managing various phases of wheat production than they were prior to the development and promotion of intensive wheat management in the mid 1980's. In addition to nitrogen management, most wheat growers now give more attention to variety selection, seedbed preparation, and the use of IPM practices, especially scouting for diseases.

The Teams realize that many more farmers should be using the intensive wheat production system and getting the benefits it provides. They are limited by time and manpower to give the first-hand educational supervision that is needed to transfer the technology. The limitations apply not only to the farmers in Maryland and Virginia, but also to other soft red winter wheat producers in the Eastern U.S. Could mass media techniques be used effectively to help train advisors and farmers and stimulate their interest in learning, testing, and implementing a new intensive production package?

Table 3. Wheat yield data for Maryland and Virginia from Departments of Agriculture Statistics and the Extension Services.

Year	Category	Yield (bu/a)
1981	Ave. yield MD and VA	39
1985	Ave. yield MD and VA	43
1991	Ave. yield MD and VA	51
1995	Ave. yield MD and VA	58
1995	Top county yield Charles City, VA	71
1995	800 acres Milton Malkus Farm Dorchester County, MD	102
1995	600 acres Courtney Price Farm Prince George County, MD	95

TRAINING SERIES VIA SATELLITE TELEVISION

A distant learning educational teleconference series was developed to expand the limited contact the team of scientists in Maryland and Virginia could provide growers and advisors in the soft red wheat production area. The teleconference series was planned and scripted by Team scientists and originated from the Communications Department Studios at Virginia Tech. The program was made possible by using the capabilities available via satellite television. Three satellite TV broadcasts were presented in September 1993, January 1994, and March 1994. Each telecast featured a different segment of the intensive wheat management system. Program content focused on timely production principles and management practices that growers and advisors would be considering over the next few weeks. The telecasts used a professional moderator to lead the discussions with appropriate scientists. This was supplemented with excerpts from the intensive wheat management video. The formal program lasted for one-hour followed by a 30-minute question and answer period. Viewers were encouraged to submit questions via an 800 number which appeared periodically throughout the telecast. Response was good and the question/answer period had to be terminated with calls waiting.

The telecasts were promoted by the network carrying the broadcasts plus Virginia Tech Communications and Extension staff. In addition, The Potash & Phosphate Institute (PPI)

published a promotional flyer which highlighted the satellite TV series and the availability of the new manual and video. PPI staff made personal visits with several extension specialists and agribusiness dealers in the soft red winter wheat growing region to promote the telecasts, wheat manual and video.

Several downlink sites were established for group attendance. These were promoted by the county extension offices and local agribusiness dealers. University extension specialists provided coordination help in some states. Typical sites for the telecasts were county extension offices, community colleges, appropriate university departments, and hotels. There were over 40 known group downlink sites in 8 states which viewed the satellite TV series. In addition, individuals could view the telecast if they had access to a C-Band broadcast.

It is estimated that over 800 persons viewed the first telecast. Success of this training series in stimulating viewers to begin intensive wheat implementation programs is difficult to measure. It is believed, however, to have increased the awareness of intensive wheat production and the advantages it holds for those farmers who implement the technology.

THE CHALLENGE OF CHANGE

The challenge of change is the most difficult management decision a farmer makes. It takes self-education, trial and error, and assistance from advisors to help implement the practices that are needed for success on a site-specific basis. This is true especially when transferring results from systems research where the greatest success with implementation comes when all principles, practices and inputs are utilized. Educational program requirements are magnified many times when you are challenging growers to change a complete crop production package compared to changing just a variety, a tillage practice or a pest control measure.

Based on experiences in Virginia, the formation of intensive wheat management clubs seems to have had the greatest influence on changing wheat production practices. Club members learn from one another and work in close association with advisors as they make the transition from old management practices. Interested local agribusiness dealers and county extension personnel hold the key to the initiation of farmer clubs. They are the individuals who must be convinced that the advantages offered by a new system is well worth their time and effort. They must provide the leadership and help farmers to learn the technology.

Four important points that can be learned from the wheat club activities are:

1. Start small: Farmers should set aside 10-20 acres as their intensively managed area. Expand as success is achieved.
2. Apply the total package: Consider the use of all principles and practices proven in research. Remain flexible because variations of an identified practice is often needed to meet site specific conditions.
3. Be timely: Timeliness of managing each step in producing an intensively managed crop is a top priority. Timeliness has no out-of-pocket cost.
4. Be committed: Don't give-up after a year or two. Adjust to mistakes and the site specific problems encountered. The greatest success is achieved by those who persist.

PROCEEDINGS OF THE TWENTY-FIFTH

NORTH CENTRAL EXTENSION-INDUSTRY

SOIL FERTILITY CONFERENCE

Published for
The North Central Extension-Industry Soil Fertility Conference
by
Potash & Phosphate Institute
2805 Claflin Road, Suite 200
Manhattan, KS 66502
913-776-0273

November 15-16, 1995

St. Louis Westport Holiday Inn
St. Louis, Missouri

Volume 11

Program Chairman and Editor:

Dr. George Rehm
University of Minnesota
Dept. of Soil, Water and Climate
439 Borlaug Hall
1991 Upper Buford Circle
St. Paul, MN 55108-6028