



Result Demonstration:

A Method That Works

Chris Boleman, Assistant Professor and Extension Specialist
 and Darrell A. Dromgoole, District Extension Administrator
 The Texas A&M University System

“A producer doing a result demonstration on his or her personal property is the ultimate in education: Hands-on and remembered! Don’t stop and file it. You’ve educated one, now educate the masses! Let the world know about it. Put up signs, incorporate it on tours, write about it in articles, newsletters and put it on the web. The multiplier effect is phenomenal.”

—Joe Janak, County Extension Agent—Agriculture and Natural Resources, Victoria County

One of the most effective educational tools for transferring research-based technology to agricultural producers and the general public is the result demonstration. As Extension works to help Texans address rapidly emerging issues, we can increase our effectiveness and the rate of adoption of new practices by conducting research trials and disseminating their results.

Result demonstrations are the very foundation of Cooperative Extension. Through the work of Seaman A. Knapp and Walter C. Porter, these demonstrations helped show farmers how to reduce boll weevil damage on cotton in Texas. The adoption of production practices and changes in behavior of producers as a result of these demonstrations was instrumental in the eventual passage of legislation (Smith Lever Act of 1914) that authorized Cooperative Extension as a part of the Land-Grant Colleges and U.S. Department of Agriculture (USDA).

A result demonstration is a trial or exercise conducted to show the public how a practice, variety or technique works. No other educational method affects the rate of adoption by its target audiences as much as does the result demonstration.



A county Extension agent hand-clips forage for a result demonstration.



Harvested forage from a result demonstration.



Grain is harvested and weighed at a result demonstration.

Several factors affect an individual learner's decision on whether to adopt an innovation, according to communications scholar Everett M. Rogers. These factors include relative advantage, compatibility, complexity, trialability and observability.

Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes. Relative advantage is usually correlated to economic profitability. However, economics is not the only consideration in determining relative advantage.

A result demonstration enables producers to easily compare the demonstration's results with those in their own operations. When the product or technique being tested outperforms the one being used by the producers, they can clearly see the relative advantage.

Compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences and needs of potential adopters. Each innovation must be compatible an individual client's values, ideas and needs.

Complexity is the degree to which an innovation is perceived as difficult to understand and use. Result demonstrations also show how complex an innovation may be to implement.

Because the innovation is set on a producer's land (typically next to a highway or farm-to-market road or in the producer's field, pasture, livestock herd, pond, barn or closed environment), producers can see the progress of the demonstration from start to finish. As a result, they can more readily decide whether or not the work performed in the demonstration is too complex for their operations.

Trialability is the degree to which an innovation may be experimented with on a limited basis. For example, a producer provides a small acreage area in which to test a new seed. If the seed grows well in the trial, the producer may plant it more extensively on the farm during the next growing season.

Observability is the degree to which the results of an innovation are visible to others. By using the result demonstration example from the example above, all the area producers would be able to see the success of the crop during crop tours held by Cooperative Extension. The producers would be more likely to adopt the practice after having "observed" the trial during the tour.

Adoption of new technologies, best practices and individual behavior changes can usually be traced to one or more of these five factors. Thus, it is imperative that you think through these factors and discuss them when trying to convince clients to adopt a behavior, best practice or new technology. If you successfully describe these characteristics, you will increase the rate of adoption by your target audience.

How to establish effective result demonstrations

Extension result demonstrations focus on solving problems and addressing issues facing producers. The process for conducting an effective result demonstration can be divided into five steps (see the Appendix for a checklist):

1. Identify the issues.
2. Plan the result demonstration to address the issues.
3. Establish and manage the demonstration.
4. Evaluate the results of the demonstration.
5. Make recommendations and diffuse the data from the result demonstration.

Each step is crucial to maximize the effectiveness of result demonstration.

Step 1: When identifying the problem, you will need to analyze the current situation. You will need to collect information that will help you accurately describe the issues facing the local producers and to develop the result demonstrations to address these issues.

This analysis may include discussions with Extension specialists; consultation with program area committees or task forces; interviews with consultants; reviews of historical production data, historical economic returns and commodity market reports; formal and/or informal surveys; interviews with producers; and field observations.

Step 2: Once the issues have been identified, you will need to engage the help of a program area committee or task force. This at a group will play a critical role in advising you on the needs, goals and suitable cooperators for the demonstration as well as in helping you formulate a comprehensive plan for disseminating the results. In addition, you will need to involve the appropriate Extension specialist in the planning of the result demonstration.

Two critical decisions that must be made during this planning stage are the identification of an appropriate cooperator and the location of the trial. When selecting a cooperator, consider:

- Is the potential cooperator enthusiastic about Extension's educational mission in general and specifically about establishing this particular result demonstration project?
- Does the potential cooperator have a reputation for credibility?
- Is the potential cooperator considered a leader?

Locate the trials at sites that are accessible to the producers who need to be exposed to the information that the trials will generate. If at all possible, choose a site that is at least viewable and possibly accessible by the public.



Signage identifies a cotton result demonstration site and treatments.



Harvesting cotton in a result demonstration.



A county Extension agent and cooperator monitor a result demonstration.

One county's success story

An Extension program was created in San Patricio County in 2004–06 to help increase the profitability and sustainability of irrigated cropping systems in the county. This program shows how result demonstrations can be used effectively as an educational method.

In 2004, water conservation and water quality were identified through Extension strategic planning as high-priority issues in San Patricio County. In that county, crop irrigation currently generates more than \$6.5 million annually, and it has increased by 50 percent there over the past several years. To increase the profitability and sustainability of these irrigated cropping systems, it was critical that producers be educated on best management practices and new technologies associated with irrigation production systems.

County Extension educators in San Patricio County, in cooperation with the local Field Crops Committee, implemented several in-depth demonstration/applied research and educational programs to help the local producers more effectively manage their irrigation systems.

They established a cotton irrigation research verification trial, which demonstrated best management practices and served as model and teaching tool for all the producers who had irrigated cotton in the area. The trial generated a return above specified expenses of \$393.98 per acre.

Canola and cotton irrigated variety tests were also conducted to determine the best varieties for local irrigation systems. The higher yielding cotton varieties produced more than 1,700 pounds of lint per acre, with a lint value of at least \$925 per acre.

Also, a screening test for cotton root rot control and a study of cotton plant growth regulators were implemented to evaluate possible yield-enhancing practices for irrigation systems.

In 2006, several activities were held to gather information and educate producers about the results of the trials and best management practices:

- Field crop symposium
- Crop irrigation seminar
- Drought strategy meeting
- Crop irrigation/water quality seminar
- Irrigation crop field meeting
- Drought strategy Phase II meeting
- Cotton Harvest Aid Clinic in August

(Continued on page 5)

If this is not possible (such as in cases where the producers cannot have visitors on their property, demonstration livestock must be moved from a visible site to distant areas because of normal rotation schedules or when the site of a demonstration is critical and must be away from viewing), you must amplify your efforts in diffusing the results in Step 5 to compensate for the lack of accessibility for public viewing.

Step 3: Next you will need to establish and manage the trials. This may involve planting the seed or initiating the desired or investigated treatment with the cooperator in comparison to a control or check. To produce sound data that Extension can use in educational efforts, you need to include three or more replicated treatments to assess the statistical significance of the trials.

These trials investigate theories or demonstrate proven production practices/technology, assess probable solutions, confirm Extension recommendations and provide data that is the basis for future Extension recommendations. To effectively establish and manage a result demonstration/applied research trial, you will need to establish protocol for:

- The design of the result demonstration
- Observation and data collection
- Recordkeeping
- Analysis and evaluation of the data

Step 4: Evaluation of the trial is an ongoing process that begins when the trial is initiated and continues through the duration of the project. At the start of the program, it is important that you take accurate notes regarding the trial and clearly mark the plots.

During the project, it is critical that you monitor the trial often, take accurate field notes, interview the cooperators for their observations and consult with Extension subject-matter specialists about notable observations.

When the trial is harvested or completed, it is essential that you again take accurate notes, evaluate and analyze the data using statistical analysis if appropriate and make a general interpretation of the data. All of the results can be used to plan future result demonstrations and make recommendations to producers.

Even if your result demonstration project fails, it is still important to evaluate it because agents, specialists and producers can learn important lessons from such failures.

Step 5: The final step is the recommendation and diffusion stage. Result demonstrations are of limited value if you implement the trial, collect the data and then send a report only to the specialists, Extension administrators and the cooperator. Unless the valuable information generated by the trial is widely distributed to clientele and used by Extension educators as an integral component of a comprehensive Extension educational strategy, its impact will be minimal.

You can distribute the research-based data from your demonstration to clientele in a variety of educational settings (Figure 1). For example, a trial or series of trials can be used as the “capstone” of an Extension educational program. The trial can be used as a source of data and teaching points for field days, result demonstration/applied research reports, educational newsletters, short courses and workshops.

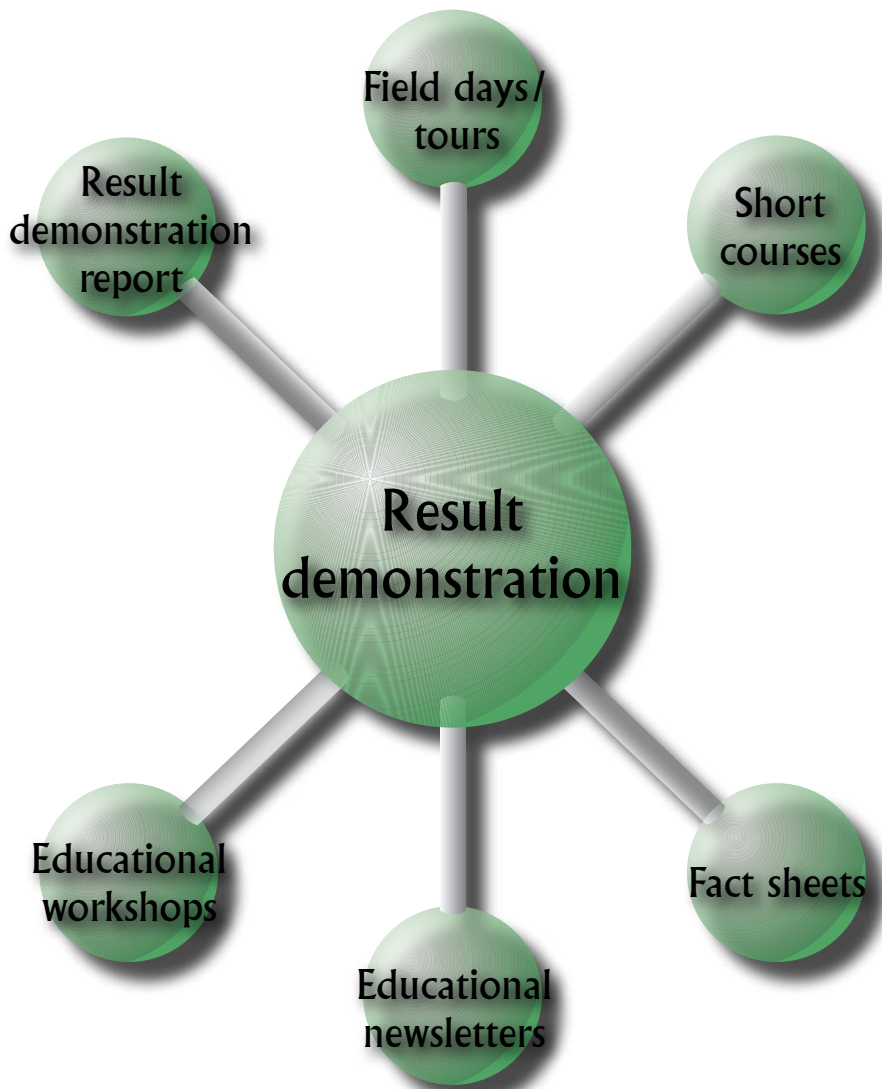


Figure 1. Educational strategies that can increase the impact of result demonstration efforts by Extension educators.

(Continued from page 4)

- Crop Market Outlook Seminar in October
- Precision Ag/ Drift Management Clinic
- Irrigation water testing program
- Coastal Bend soil test campaign

This comprehensive effort was evaluated through the results of the field trials conducted, direct observations and a retrospective post survey of producers with irrigated crops. Results of the survey included:

- 100 percent of the producers surveyed indicated that the educational efforts conducted by county Extension educators helped them analyze their cropping practices and make better management decisions.
- 70 percent indicated that their crop yields have increased as a result of the best management practices learned during Extension educational activities.

Practices implemented as a result of Extension programs in San Patricio County are shown in Figure 2.

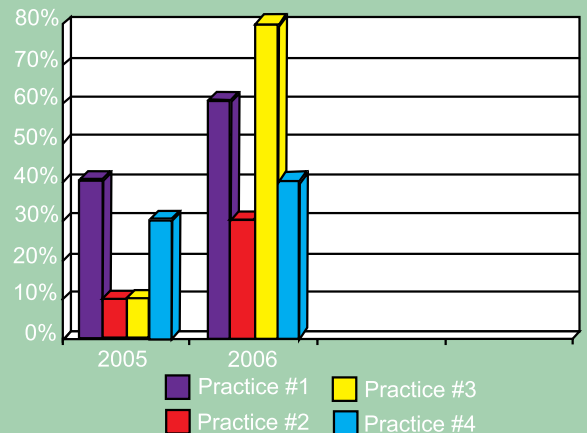


Figure 2. Percentage of adoption of practices reported by producers in San Patricio County in 2005 and 2006 (practices implemented are listed below) as result of Extension educational programming.

- Practice #1** Monitoring Extension cotton trials to aid irrigation scheduling decisions
- Practice #2** Altering crop management based on changing water quality
- Practice #3** Testing the quality of irrigation water
- Practice #4** Scheduling irrigations based on soil moisture sensors, evapotranspiration or crop maturity



A calf receives an implant during a result demonstration.



A cooperater establishes a crop result demonstration.



A county Extension agent presents result demonstration data at an Extension educational meeting.

Conclusion

Texas Cooperative Extension aims to accurately identify the issues facing our clients, prioritize those issues and develop educational programs that improve social, economic and/or environmental conditions in Texas. In today's complex, rapidly changing environment, no other educational delivery method offers adoption and diffusion strategies to the degree of result demonstrations. Result demonstrations are a useful tool to help educate producers on ways to improve their agricultural operations.

Acknowledgments

Jeff Stapper, Joe Janak, Roy Parker and Ron Woolley provided input and guidance for this publication.

For more information

"Applied Extension Research in an Era of Devolution," by Thomas W. Blaine. *Journal of Extension*, 2005. Retrieved March 8, 2007 from <http://www.joe.org/joe/2005april/comm1.shtml>.

Diffusion of Innovations (Fourth Edition), by Everett M. Rogers. Free Press, 1995.

Extension Education: Conducting Effective Agricultural Demonstrations, by John Hancock. Kentucky Cooperative Extension Service, 1992.

Hybrid Corn: An Exploration in the Economics of Technological Change, by Zvi Griliches. Econometrica, 1958.

"Irrigated crop management," by Jeff Stapper. *San Patricio County Outcome Summary Report*. Texas Cooperative Extension, 2006.

"A Study of Technological Diffusion," by Bryce Ryan. *Rural Sociology*, 1948

Taking the University to the People: Seventy-five years of Cooperative Extension, by Wayne D. Rasmussen. Iowa State University Press, 1989.

Appendix

Checklist for Developing an Effective Result Demonstration

Step	Questions to consider	Notes
1. Identify the issues.	<ol style="list-style-type: none"> 1. What are the issues facing producers? 2. What advice has been provided by program area committees, specialists and consultants about the potential issues facing the producers? 	
2. Plan the result demonstration to address the issues.	<ol style="list-style-type: none"> 1. Is a specialist involved in the design of the demonstration project, and is an appropriate experimental design used? 2. Is the potential cooperator enthusiastic about Extension's educational mission in general and specifically about establishing this particular result demonstration project? 3. Does the potential cooperator have a reputation for credibility? 4. Is the potential cooperator considered a leader? 5. Is the proposed location accessible to the producers/public (does it need to be)? 	
3. Establish and manage the result demonstration.	<ol style="list-style-type: none"> 1. Did you develop a protocol? 2. Does the protocol include strategies to observe and collect data, keep records and analyze data? 3. Is the demonstration replicated (if appropriate)? 	
4. Evaluate the result demonstration.	<ol style="list-style-type: none"> 1. Did you use the established protocol to monitor and collect data? 2. Was the information shared with the appropriate specialist in an attempt to ensure that the results are correct? 	
5. Make recommendations and diffuse the data from the result demonstration.	<ol style="list-style-type: none"> 1. Was a strategy developed to report the results with local producers? 2. Was the information shared with the program area committee? 3. Was information incorporated or used as the capstone of educational programs conducted? 	

Produced by Agricultural Communications, The Texas A&M University System
 Extension publications can be found on the Web at: <http://tcebookstore.org>

Visit Texas Cooperative Extension at <http://texasextension.tamu.edu>

Educational programs conducted by Texas Cooperative Extension serve people of all ages regardless of socioeconomic level, race, color, sex, religion, handicap or national origin.

Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture. Edward G. Smith, Director, Texas Cooperative Extension, The Texas A&M University System.