

## A New System: Dissemination of Scientific and Technical Information

Helen B. Scott

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## A New System: Dissemination of Scientific and Technical Information

### Abstract

Social and natural scientists face a burgeoning volume of information

# A New System Dissemination of Scientific and Technical Information

Helen B. Scott

## Summary

Social and natural scientists face a burgeoning volume of information. They need help in sorting it out to the essentials in their field of interest. This and the growth of new and diverse user groups with varying information needs challenge communication specialists to come up with dissemination systems that bring essential information to appropriate audiences in an immediately usable form.

This study presents a more efficient and effective system for scientific and technical information (STI) dissemination developed in the Department of Agricultural Communications, Texas A&M University, using the publications of the Texas Agricultural Experiment Station (TAES).

### **Objectives for the study follow:**

1. To develop a system for improved STI dissemination to expedite the publication process and improve information transfer to specific audiences.
2. To test the system (a) by comparing alternative notification systems and (b) by comparing alternative formats for scientific and technical publications.

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The dissemination system has two phases: (a) an abstract to notify the TAES distribution list that a publication is available and (b) a "brief"—more comprehensive than an abstract but less comprehensive than the full text of a publication—to give the main ideas of a full-text report in an immediately usable form, thus reducing requests for additional information (full text).

#### **Tests of the dissemination system show that**

1. Use of the system permits wide notification to select groups that the publication is available; it helps editors determine the number of copies to print more efficiently, thus reducing costs of printing and storage; and it encourages distribution to interested persons or groups only.

2. In comparison with alternative formats, briefs elicited fewer requests for full-text publications (4.6 percent) compared with abstracts (12.1 percent). This difference suggests that sufficient information is available to the user who receives the brief; he does not need to request a full-text publication but can use the material immediately, whereas the user who receives the abstract feels he needs more information.

3. In a controlled study of alternative formats, abstracts elicited the most requests for full-text publications (8.4 percent), the combination brief with mailer elicited 1.2 percent, and the brief without mailer, 0.2 percent.

4. In evaluating the impact of the dissemination system on the user, the brief (61.6 percent) is more useful than the abstract (38.4 percent) as a publication format; users prefer the abstract and brief notification system (64.0 percent) compared with the previous system (36.0 percent) of automatic mailings of all publications.

5. Users prefer hard copy—printed on paper—(97.5 percent) compared with microfiche (2.5 percent).

## **Introduction**

The mounting volume and complexity of scientific and technical information cause scientists problems in screening literature for the essentials they need and can manage. To administrators and editors of scientific and technical publications the deluge brings spiraling costs and problems related to processing, storing, retrieval and dissemination of research results.

The problem for those actively engaged in transfer of technical and scientific information then becomes how to

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synthesize science and technology for more effective and efficient information transfer. In short, how to cope? One way to cope is to develop systems for better dissemination of research results through publications than those currently being used.

### **Setting for the study**

Technical publications of the Texas Agricultural Experiment Station (TAES) were used to develop the proposed dissemination system. Facilities, equipment, and personnel in the TAES publications section of the Department of Agricultural Communications, Texas A&M University, provide an ideal setting for incorporating a study of this nature into an already existing framework. The operational testing and monitoring require minimal modifications of existing facilities and personnel.

## **Results**

### **Development of Dissemination System**

The first objective of the study was to develop a system for improved dissemination of STI to expedite the publication process and to improve information transfer to specific audiences with specific needs. This was accomplished (a) by the development of an abstract-notification system (Figure 1) for notifying the TAES distribution list (Figure 2) that a publication is available and (b) by the development of a brief (Figure 3) publication format, more comprehensive than an abstract but less comprehensive than the full text of a publication.

### **Test of Dissemination System**

The second objective was to test the dissemination system (a) by comparing alternative systems and (b) by comparing alternative formats for scientific and technical publications. Three studies accomplished that objective.

The *first study* was on four publications, using an abstract announcement with a self-addressed, postage-paid return for use by those who want copies of the full text. The study results show that use of this system permits wide notification that the publication is available; the system helps editors determine printing numbers more efficiently, thus reducing costs of printing and storage; and it eliminates sending publications to those not interested in them.



THE TEXAS AGRICULTURAL EXPERIMENT STATION / J. E. Miller, Director  
Texas A&M University System / College Station, Texas

NEW PUBLICATION

B-1185  
October 1977

IDENTIFICATION, DISTRIBUTION, AND BIOLOGY OF FIRE ANTS IN TEXAS

Akey C. F. Hung, Margaret R. Barlin, and S. Bradleigh Vinson

Of the five species of fire ants recognized in the United States, only four presently are found in Texas, with the red imported fire ant (*Solenopsis invicta*) now infesting most of eastern Texas. Although efforts to control imported fire ants have been a subject of controversy since the U. S. Congress authorized a cooperative federal-state eradication program in late 1957, these insects are acknowledged as serious nuisances to both people and domestic animals in the affected areas. Fire ants are also drawing attention from physicians in infested areas as they become aware of the medical problems associated with stings.

This publication identifies the different species of fire ants by means of a taxonomic key and use of electron microscope photographs. Both the key and photographs are designed for use by those not professionally trained in ant identification. Past and present distribution of the pests are delineated. Other sections are devoted to the introduction of the imported fire ant into the United States, current control methods, and research for future control. Specific county distribution is provided for each specie of fire ant.

The publication includes 25 figures (including 18 electron microscope photographs), a glossary, and an extensive bibliography.

KEYWORDS: Fire ant/identification/distribution/biology/red imported fire ant (*Solenopsis invicta* Buren)/Southern fire ant (*Solenopsis xyloni* McCook)/desert fire ant (*Solenopsis aurea* Wheeler)/tropical fire ant (*Solenopsis geminata* [Fabricius])/control/research/Texas.

.....  
If you would like a copy of the above publication, please fold and return this form to us. No postage is needed.

The publication is being processed and will be distributed when printed.

TAES 77-74

**Figure 1. Abstract notification format**

Author: Nathan B. Stewart

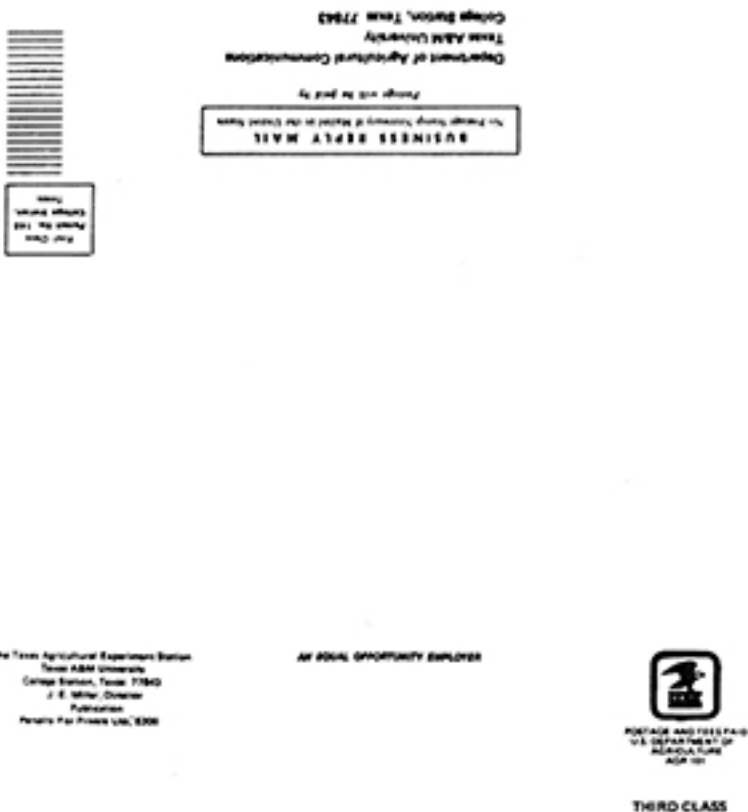


Figure 1. (Cont'd)

**TAEs FORM 36-83**  
 (Revised 8-6-77)  
**DISTRIBUTION FORM**  
 (Sheet 2 of 2)

No. \_\_\_\_\_

The following distribution is recommended for the manuscript: \_\_\_\_\_

\_\_\_\_\_

Signed \_\_\_\_\_ Date \_\_\_\_\_  
 (Author or Editor)

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TAES Staff, Campus	400	Extension Area Specialists, Agri.	131
TAES Staff, Field	340	Extension Campus Specialists, Agri.	90
AM System and University, Campus	22	Extension Specialists, Home Econ.	25
AM System Directors	9	Extension Dist. Agts., Agri.	14
Miscellaneous List	302	Extension Dist. Agts., Home Econ.	14
Libraries, Mostly Colleges	153	Co. Agri. Agts.	224
Agri. Depts., Texas Colleges	14	Co. Home Dem. Agts.	187
_____	_____	Foreign	31
_____	_____	Depository Libraries	54
_____	_____	_____	_____
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Copies for Optional List	_____	_____	_____
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If the author wishes extra copies for himself or other parties, show on the blank lines following the number wanted and for whom. Give the full address of any party so listed which may be unknown to the Mailing Room.

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_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

**Figure 2.--Distribution list for TAES publications.**





THE TEXAS AGRICULTURAL EXPERIMENT STATION / Neville P. Clarke, Director  
Texas A&M University System / College Station, Texas

PR-3477  
December 1977

**Soybean Varietal Performance Trials  
on the Texas Gulf Coast**

J. W. S<sup>1</sup>\*

Soybean production has become an established enterprise throughout the rice production areas of the Texas Gulf Coast. As a result of both favorable market conditions and rice-soybean rotation systems, soybeans are being planted in an increasingly wide range of soil types and environments. Not all varieties perform equally well in all situations. For maximum return on investment, a producer must select varieties best suited to his land and equipment. Hence, selection of the right variety becomes an important and critical decision. A producer must be aware of the varieties available to him, their agronomic features, the adapted varieties in different maturity groups, and the effects of planting date on maturity dates of those varieties.

Twenty-six soybean varieties were tested at the Texas Agricultural Experiment Station at Beaumont during 1974 and 1975. The top performers in their respective maturity groups follow: Group V — Darr, Fernat; Group VI — Davis, Lee 68 and 74, Tracy and Pickett 71; Group VII — Bragg, Ramson, Bossier, and McNair 80; Group VIII — Hutton, Hampton 295A and Coker 338. Yields of some varieties exceeded 50 bushels per acre during favorable years.

The maturity date was determined for Lee 68 (VI) and Ramson (VII) for any given planting date in 1974. The graphic relationship between planting date and maturity appeared to be linear. Although the results were based on two varieties and only one year's data, the clear relationship between planting date and maturity provides a basis for future research which would benefit soybean management operations.

The Group V varieties had the lowest seed quality at maturity. The decline in seed quality for all maturity groups was minimal during the first 2 weeks following maturity; thereafter, the decline in quality accelerated. Percent germination of Ramson and Hutton soybeans declined equally with harvest delay, as evidenced by a 50-percent loss 4 weeks following maturity. Thus, for soybean growers in the Gulf Coast, prompt harvesting

following maturity is indicated for selection of the highest possible quality and germination. Agronomic characteristics of varieties tested are shown in Table 1.

**ACKNOWLEDGEMENTS**

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**KEYWORDS:** Soybean/variety/maturity date/Texas Gulf Coast/agronomic characteristics/seed quality.

The complete report, PR-3477C, "Soybean Varietal Performance Trials on the Texas Gulf Coast," with three tables and three graphs, is available from Associate Editor, *Agribusiness Section Publications, Department of Agricultural Communications, Texas A&M University, College Station, Texas 77843. Allow one month for delivery.*

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\*Associate professor, The Texas Agricultural Experiment Station, Beaumont.

**Figure 3.—Brief format developed as an alternative to the abstract notification.**

The *second study* was on alternative formats, abstracts and briefs, to answer the following question: Will the user of the brief request fewer full-text publications than the user of the abstract?

The study compares the percentage of requests for full-text publications from May 1975 to May 1977 resulting from (a) returns from abstracts and (b) returns from briefs. Abstracts result in 12.1 percent requests for full-text publications, while briefs yield only 4.6 percent requests (Table 1).

**TABLE 1: Comparison of requests for full-text publications from abstracts and briefs, May 1975-1977**

Printed Version	Number			Percent
	Publications	Mailed	Requests	Requests
Abstract	34	62,275	7,544	12.1
Brief	135	87,270	3,996	4.6

The *third study* was a controlled experiment to determine user preference according to notification format. Three full-text publications in the same subject-matter field, each covering only one phase of the subject, were prepared for the same audience by the same author in similar style and length. Each of three formats was prepared in three versions and identified as (a) abstract notification (b) brief without self-mailer; and (c) combination of the brief with self-mailer (self-addressed, postage paid return). Each of the three formats notified the user that the full-text publication was available on request.

The three groups of the distribution list used in this study consisted of selected sublists of the TAES mailing list—the Texas Agricultural Experiment Station (TAES), the Texas Agricultural Extension Service (TAEX), miscellaneous and A&M System—and a special list of 1,140 names provided by the author of the test publications. All groups received all treatments of all publications. The dependent variable was the number of requests made for the full-text publications.

User response was subjected to an analysis in a Latin Square design to determine statistical significance. The Latin Square design used to order the data for analysis on the three publications involved three formats and three groups of the TAES distribution list, for a total of nine vari-

Distribution List	Publication			Total Returns
	I	II	III	
	A <sup>1</sup>	C <sup>1</sup>	B <sup>1</sup>	A+B+C
Group 1	74 Returns	12 Returns	3 Returns	89 Returns
864 Mailed	(8.6%)	(1.4%)	(0.3%)	(10.3%)
	B	A	C	B+A+C
Group 2	1 Return	79 Returns	12 Returns	92 Returns
862 Mailed	(0.1%)	(9.2%)	(1.4%)	(10.7%)
	C	B	A	C+B+A
Group 3	6 Returns	1 Return	63 Returns	70 Returns
859 Mailed	(0.7%)	(0.1%)	(7.3%)	(8.1%)
TOTAL	81 Returns	92 Returns	76 Returns	251 Returns
2,565 Mailed	(3.1%)	(3.6%)	(3.0%)	(9.7%)

<sup>1</sup>Treatment (Format)  
 A-Abstract  
 B-Brief without matter  
 C-Combination of brief with matter

**Figure 4.--Analysis of Variance Using Latin Square Design on Audience Response to Dissemination System Involving Variables: Publication, Treatment (Format), and Distribution List (Groups).**

A three-way analysis of variance revealed significant differences at the .01 level of confidence ( $P > .01$ ) on the format items. There were no significant differences in the publication and the group variables (Table 2).

**Table 2. Analysis of variance of audience response to dissemination system involving variables: publication, treatment (format), and distribution list (groups)**

Source of Variance	Sum of Squares	df	Mean Square	F Ratio
Treatment	88860.21	2	4430.10	303.43**
Publications	36.22	2	18.11	1.24
Distribution	94.89	2	47.45	3.24
Error	29.26	2	14.63	
Total	9020.88	8		

\*\*Significant at the .01 level of probability.

A frequency analysis of returns (Table 3) revealed that requests for full-text publications were highest from the abstract notification (8.4 percent), next highest from the combination brief with mailer (1.2 percent), and lowest from the brief without mailer (0.2 percent).

**TABLE 3: Requests from three formats--abstract, brief without mailer, and combination brief with mailer**

Publication	Percent		
	Abstract	Brief	Combination
Publication I	8.6	0.1	0.7
Publication II	9.2	0.1	1.4
Publication III	7.3	0.3	1.4
Total	8.4	0.2	1.2

### User Evaluation of System

The third objective was to evaluate the impact of the dissemination system on the user. A survey questionnaire was administered to selected groups of the TAES distribution list.

Results from the survey sent to the selected distribution list—Experiment Station, Extension Service, and miscellaneous and A&M System—reveal that all groups prefer the brief (61.6 percent) compared with the abstract (38.4 percent) as a notification system and as a publication format (Table 4).

**TABLE 4: Audience preference for brief vs. abstract format**

Mailing List	Audience Preference	
	Abstract	Brief
Experiment Station	43.6	56.4
Extension Service	31.9	68.1
Miscellaneous and A&M System	35.3	64.7
Total	38.4	61.6

Questionnaire returns showed a 64.0 preference for the abstract and brief notification system compared with 38.0 percent for the previous system used for TAES publications

**TABLE 5: Audience preference for automatic mailing vs. brief with abstract notification**

List	Notification, Percent	
	Automatic	Brief or Abstract
Experiment Station	27.4	72.6
Extension Service	40.3	59.7
Miscellaneous and A&M		
System	51.8	48.2
Total	36.0	64.0

Questionnaire returns showed a 97.5 percent preference for hard copy publications compared with 2.5 percent for microfiche (Table 6).

**TABLE 6: Audience preference of hard copy vs. microfiche**

List	Form, Percent	
	Hard Copy	Fiche
Experiment Station	97.7	2.3
Extension Service	97.2	2.8
Miscellaneous and A&M		
System	97.6	2.4
Total	97.5	2.5

### Recommendations for Future Research

In this study, only some areas were considered for improved dissemination of information for scientific and technical publications. Other areas to be considered follow:

1. A cost/benefit study on publications that would analyze and compare costs of different formats—briefs, abstracts, and full-text publications; editor time for preparation of briefs and abstracts compared with costs of preparation of full-text publication; printing costs before and after the notification system and abstract/brief/full-text formats were developed; space requirements for storage resulting from the changed notification systems for preparing publications;

and postage costs for the notification system and the different publication formats

2. An audience survey of TAES publications on readability (quality of writing), usefulness of information, timeliness, professional knowledge, technical content, and general content

3. A study of library needs and user needs for microfiche publications compared with hard copy (printed on paper) publications to determine standardization of microfiche size and reader-printers in libraries, among scientists, and in the Department of Agricultural Communications; readability of microfiche; and reference uses for microfiche.

Although this study was conducted on TAES technical and scientific publications, the same need exists to disseminate relevant information to all researchers more effectively.

### **Comments Regarding TAES Publications**

The following comments are representative of responses to the questionnaire sent to the distribution list to help evaluate the impact of the system developed and administered as a part of this study. The comments from the returned questionnaire are grouped under the following headings.

#### **Abstract and Brief**

1. Often, the abstract does not provide enough information to evaluate usefulness of publication.
2. The abstract is a good idea.
3. Abstract/brief notification is great; should save us lots of printing and storage.
4. I like the abstract as a means of describing the publication. I have no use for the brief. The abstract and the full text meet my needs.
5. In this day of abundant reading materials, abstracts of material not directly related to my research are about all that one has time to read.
6. Abstract notification with full-text publication on request is the best way to operate. The brief encourages news release type of data use and scientific data use without the full text. This is incorrect procedure and should be discouraged.
7. Abstracts are fine, brief is merely an expanded abstract. System is better today than it was 4 or 5 years ago. If I need more than the abstract, I want the entire article.
8. I like the movement to "briefs."
9. Change the abstracts on the fold and return form.

10. Scott: A New System; Dissemination of Scientific and Technical Information in as full a form as is available from you.
11. I especially like the fold and return feature of the abstract.
12. Abstract should be less time consuming to prepare—speed is important.

### **Notification System**

1. The current method of notification has allowed me to be more selective in the information I collect.
2. These publications are excellent but they are not necessarily useful to me. I want to receive those which I can use by asking for them. Otherwise you can save cost by not sending me those which I cannot use.
3. I am not sure that this fold and return mailing always works so I am not sure that I get what I want when using the notification system.
4. I like the full-text over abstracts and briefs; however, I get a lot of publications I throw away. Could you restrict mailing to preselected subject matter areas?
5. Receive too many publications irrelevant to my field of research.
6. I like your system. Because of my selected interests I really don't use or benefit from each and every mailing...would it be economical to send the publications to only those interested?
7. Automatic mailing is too wasteful; items not of interest are received.
8. I like your program of sending prepublication information and a returnable request for items of interest.
9. I think publications of TAES are good. With automatic mailing lists, I receive some publications I don't need and miss others I want.
10. In the past all the TAES publications were sent out to all staff members. I would say that 80-90 percent of these publications were not even looked over or read. The use of the brief gives a person the opportunity to order the complete publication or not.
11. I think notification by abstract or brief is a tremendous cost-saving step and yet provides information to those really interested in material.
12. If I need the publication after reading the brief, I can send for it.
13. I think it is a good idea and should save money. I have thrown away a lot of publications I'm not interested in.

14. Need improved notification system for complete publications.

### **Microfiche and Hard Copy (Printed on Paper)**

1. Since we don't presently have microfiche capability, we prefer hard copy.
2. Microfiche and microfilm are time consuming, inefficient and ineffective means of communication that require specialized machines. It's also painful.
3. Whichever is cheaper (microfiche or hard copy). Information depends on field of interest.
4. Have not previously considered microfiche—this might be acceptable.
5. We don't have microfiche reader readily accessible. If we did, I think I would (someday in the future) like hard copy of the notifications, then microfiche of the complete test that I might order.
6. Microfiche would be preferable if equipment for reading would be readily available.
7. Microfiche will have real advantage when we revise personal filing system to accommodate it.

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