Edward A. L. Leer

PROCEEDINGS

Twenty-Second Annual Meeting
Southern Weed Science Society

January 21, 22 and 23, 1969

Dallas, Texas

PREFACE

These Proceedings of the Twenty-Second Annual Meeting of the Southern Weed Science Society held January 21, 22, and 23, 1969, in Dallas, Texas, include formal papers, minutes of the business meeting and lists of registrants and sustaining members. An Author Index was included in the 1967 Proceedings and a Herbicide Index was included in the 1968 Proceedings. A Weed Index is included in the 1969 Proceedings.

The membership voted to change the name of the Society during 1968 from the "Southern Weed Conference" to the "Southern Weed Science Society" in keeping with the national trend toward recognition of weed control as a science.

Only those papers which are actually presented at the Conference are published in the Proceedings. Authors may publish full papers up to 10 pages in length or abstracts which are restricted to one page in length. Papers exceeding these limits are permissible upon payment of an extra page charge of $15 per page of overage. Invitational papers are exempt from page limits. Authors are required to prepare a final copy of their paper according to a prescribed format. Final publication copy is directly reproduced from the submitted copy. Accordingly, each author is responsible for the content of his own paper. The rapid publication schedule does not permit editorial review of content.

Additional copies of Proceedings and the associated publication, the Research Reports, for certain of the previous meetings are available. Cost is $10 per Proceedings and $5 per Research Report whether they are purchased singly or as a set. Items mailed outside the United States, its Commonwealths and Canada will be subjected to a 10 percent (10%) mailing charge. Orders should be placed with the Conference Editor: A. D. Worsham, Department of Crop Science, North Carolina State University, Raleigh, North Carolina 27607.

Permission to reproduce any part of the Research Report should be secured from the Executive Board. Permission to use any part of any paper in the Proceedings of the Southern Weed Science Society should be secured from the respective author(s).

MILESTONES IN SOUTHERN WEED SCIENCE

Leonard Lett
Colloidal Products Corp.
Memphis, Tennessee

The first Southern Weed Conference was held at the Delta Branch Experiment Station, Stoneville, Mississippi, on June 10-11, 1948. It was the second milestone I would suggest this morning, although any list of weed science milestones is highly arbitrary. The meeting was held at the direction of the Southern Experiment Station Directors who recognized that weed control was a problem of regional significance which should be attacked on a coordinated basis. The first milestone had occurred just a few years before, with the introduction on a commercial scale of 2,4-D. This was a small beginning, attended by a total of 73 individuals from experiment stations in the Southern Region, representatives from U.S.D.A., regulatory agencies, Agricultural Extension Service, and chemical and machinery companies. Several of the individuals in attendance at the 1948 meeting are with us today and should be congratulated on putting into motion the effort that formed the Southern Weed Conference. Of significance at our meeting is an announcement that the name of our Conference will be the Southern Weed Science Society in the future.

In opening the Southern Weed Conference at the Delta Branch Experiment Station, the superintendent at that time, Dr. Charles R. Sayre, made the following statement: "In our small grains, we have serious infestations of curley dock, cheat, and darnell. They are in many instances driving many small grains off many acres of land in the alluvial areas of Mississippi, Arkansas, and Louisiana. In our row crops, the main focal point of this meeting, it is worthwhile to review our proving grounds last year with cotton. We attempted to fully mechanize three or four field-sized cuts, keeping accurate time, cost, and performance records of each operation. We had 39 man hours of labor used on these tests, 32 of that 39 man hours were hoe labor for weed control. That will give you some idea of just how important weed control is to farmers in this area."

In reviewing the proceedings of this first SWC, it is interesting to note that a total of 13 papers were presented during that first conference. The growth of our Conference can easily be confirmed in checking the program for our 22nd Annual Meeting, where we have nine different sections with over 137 technical papers, plus 3 invitational papers. In our graduate student program alone, a total of 17 papers will be presented.

It is interesting to note also that some of the terms we are still using were mentioned frequently and often during this first conference. Such words as "pre-emergence", "post-emergence", "volatility", "droplets", "translocation", "penetration","wetting agents", and many more.

Some of the chemicals used then are still very much in the weed control picture: 2,4-D (various formulations), dinitro, I.P.C. (C.I.P.C.), sodium pentachlorophenate, sodium trichloroacetate, sodium arsenite, various types of oils, and probably one or two more. In hurriedly glancing through the Herbicide Index of our last Research Report, I counted a total of 133 herbicides used by members of our Conference in their research programs during 1968. All of this number are not available to our farmers, of course, and some may never be marketed, but the potential is there as we continue to produce improved herbicides for our farmers to battle his greatest enemy, the weed.

In the period 1950-52, certain events occurred that I refer to as milestone three. First, there was in this period an expanded use of pre-emergence applications for weed control in cotton. A labor squeeze furnished the motive power for much of this advance of pre-emergence compounds and farmers responded with early efforts, many of them quite successful, to control pest plants this way.

This period also was characterized by a setback of chemical herbicide use, when we went too far and too fast in the pre-emergence applications.

As with the other milestones I shall outline here this morning, milestone three gave even greater urgency to the need for the Southern Weed Conference. By 1952, it was obvious that each advance in weed science carried with it a potential opportunity for a widespread failure. It was also obvious that our organization was being called upon -- through its members in all their branches of the science -- for a greater role.

There was even greater need for a sharing process, such as we are observing here this week. There was a need for both formal and informal ways for researchers, regulators, manufacturers, and farmers to coordinate better their efforts. Before moving to milestone four, let us look at the background of the need for even more and better ways to kill weeds chemically.

The need for improved herbicides and labor-reducing practices and devices can be readily realized by studying the trend in the movement of farm labor from the farms. I do not have figures from various sections of the South, but I believe they are closely related. According to figures on the Mississippi Delta obtained from the Mississippi Employment Security Commission, there were 83,668 farms, 61,379 Share tenants and 36,990 Regular Hired Workers on these farms in 1950. In 1967, there were approximately 24,700 cotton producing farms with 24,915 operators and unpaid family workers. At the same time, the number of regular workers continued to climb. In fact, approximately 2,000 more regular workers were added during this period, bringing the figure up to a little over 26,000. The most drastic drop has been in the loss of share-crop tenants, where more than 45,000 were lost during the fifties because of the transition type tenancy. By 1959, the Census of Agriculture estimated 17,563 share tenants. This was further halved by 1964 when only 8,788 share tenants were reported. This type of farming became near extinct in 1967, with the advent of minimum wages. Persons in a share-crop type of arrangement were adjudged as employees of the operator and subject to coverage under minimum wages.

This confirms the point that the farmer is faced with shortages and increased labor cost. To meet these obstacles, the farmer must rely more on skilled labor and improved farm practices. In latest figures available to me, approximately 13 man hours are required to produce a bale of cotton. It has been estimated that these man hours can be reduced to 8 by improved weed control practices. Comparable reductions in man hours can be made in other crops.

During 1951-53, herbicidal oils became the fourth milestone. Cotton growers in that period began using the oils for post-emergence control of weeds in their crops. Now, this practice is subject to evolution, but still enjoys wide acceptance in some areas.

In the years 1954-57, farmers began to expand the use of herbicides in single crops and they also began to widen the application of chemicals to include more crops. Cotton, peanuts, and corn were by then firmly in the chemical control camp and more and more, farmers were looking for even wider uses of chemical weed controls.

Rangeland and non-cropland came under the influence of chemical herbicides in the period 1954-60, roughly. This was a relatively new concept, but it grew quickly as public officials recognized the same need for cutting labor costs as recognized by farmers.

Of the nine sections of our program this year, about three sections include some phase of weed control related to that milestone.

In 1960-63, the use of pre-emergence compounds for post-emergence weed control formed the next milestone. This was made possible by adding surfactants to the pre-emergence materials. In some ways, this milestone may be the hardest to measure, since we cannot see the end of this kind of application. As new materials come out of the laboratory now, researchers can appraise them for post-emergence activity, as well as for pre-emergence activity.

In reviewing the publication ARS 34-102 published in August 1968 by USDA, many interesting facts on the use of herbicides by our farmers may be readily ascertained. The use of herbicides continues to increase. In 1965, nearly 120 million acres were treated with herbicides, as compared with 70 million in 1962 and 53 million in 1959. In bringing these facts a little closer home and looking at crops produced primarily in our area, we can come up with some interesting and significant facts. For example, in 1965, cotton producers treated approximately 49 percent of the harvested acreage before the crop emerged and 43 percent after emergence. More than 6.6 million acres were treated with pre-emergence herbicides at an average cost of $5.05 per acre and about 5.9 million acres were treated post-emergence at a cost of $4.48 per acre.

Peanuts grown almost entirely in our area were treated as follows: 26 percent of the harvested acreage with herbicides before the crop emerged and approximately 29 percent after emergence. The 377,000 acres treated pre-emergence was at a cost of $8.13 per acre and the 420,000 acres treated post-emergence was at a cost of $7.79 per acre.

Rice farmers in 1965 treated almost 23 percent of the harvested rice acreage with herbicides before the crop emerged and almost 55 percent after emergence. A note of interest of the 985,000 acres treated post-emergence at an average cost of $8.69 per acre: Rice farmers treated only 8 percent of their treated acres with their own application equipment and custom applicators treated 92 percent. Of all agronomic crops, rice has the highest percentage of the herbicide applications made by custom operators. The main factor is that practically all of the applications are with aerial equipment.

The previous figures indicate the importance and increased use of herbicides in agriculture and industry. In 1967, for the first time, herbicides accounted for a bigger percentage of the pesticide market than insecticides. Insecticides accounted for 43.4 percent of the market where herbicides accounted for 47.8 and fungicides only 8.8 percent.

I have three interesting slides that were kindly loaned to me by Dr. W. B. Ennis, Chief of the Crops Protection Branch, USDA, Beltsville, Maryland, that depict very vividly the increased use of herbicides in our everyday battle to reduce costs and increase production. In this first slide, "Extent of Use and Costs of Pesticides 1964," notice the chart on the right. Approximately 123,000,000 acres were treated with herbicides and approximately 77,000,000 acres were treated with insecticides. Fungicides, defoliants, and desiccants, and nematocides follow. The small charts on the left indicate the chemical cost, usage rate, and usage cost and are just as striking.

The next two slides demonstrate vividly the importance of herbicides in the national pesticide economy. This one gives a breakdown of the total sales of pesticides by class which shows, as previously stated, that herbicides led in dollars. This next slide gives the sale of pesticides in pounds. Insecticides led with slightly over 500 million pounds and herbicide sales are about 251 million pounds.

What does all of this show? It very definitely demonstrates that we have come a long way since 1947, when the U. S. Tariff Commission reported a total of 8,800,000 lbs. of herbicides and plant hormone production.

The largest question is where will we go from here? Just what part will the Southern Weed Science Society have in these developments? I think one of the best ways to answer these questions is to look at the objectives of our SWC Constitution as stated by Dr. W. B. Ennis at our 1954 meeting. "The Conference is established to bring together representatives of the Southern states of the U. S., Puerto Rico, and other states and areas, and agencies, institutions, and persons who are directly interested or engaged in weed control through research, education, regulation, manufacturing, or merchandising. The purpose is to exchange ideas, experience, opinions, and information and discuss and plan means of securing more adequate weed control by Federal, State and local or private agencies."

To further expound on this subject I would like to quote from a portion of a talk by one of my predecessors, Dr. R. E. Frans of the University of

Arkansas, who was our most able President in 1965 when we last met in Dallas. He pointed out three unique functions of the SWC which I feel are most appropriate in this manner (1) SWC provides an annual forum, truly a "workers' conference" where the county agent, the farmer, the farm manager, the manufacturer, the State and Federal researcher, the utility representatives, the distributor or formulator and others can all meet on a common ground in a mutual exchange of ideas -- where they can discuss problems, that to a large extent, only occur on the regional level -- and where preliminary research findings, not yet ready for final publication, can be heard and their implications discussed.

(2) SWC can serve as an interpretive body to the general public living in the Southern states on matters pertaining to Weed Science, particularly in areas where the need for controlling weeds in a particular situation must be pinpointed and where the need for dependence upon chemical control measures must be interpreted to the public.

I am going to digress from Bob's remarks to point out that the need is even greater now than when he suggested that we of the SWC will have to stand up and be counted in defending the role of pesticides in our modern-day agriculture. Bob's words certainly have become a reality, as agriculture is being "sniped" at from all sides at even a greater rate than just four years ago. Bad pesticide publicity has scared consumers by playing up isolated pesticide accidents, and unjustified reports. Wrong interpretation, improper emphasis, and half truths in the news have misled, misinformed and alarmed the public. This great injustice to the public, farmers, public service agencies, and the pesticide industry should be corrected by true statements about pesticide use. We in the SWC will have to assume a stronger and larger role in telling the story as it is.

All of us, the farmer, educator, researcher, pesticide manufacturer and distributor, and related groups are caught in a continuation of this vicious "cost-price squeeze." The cost of doing anything is going up and I wouldn't attempt to explain or make any predictions on where it will end up, but we know the role of pesticides in producing food and fiber for our exploding world population. It has been often stated by reliable authorities that without pesticides, food would cost up to 50 percent more. Farm pesticides make savings possible by (1) increasing yields (2) improving quality of products and (3) reducing cost of labor.

We have made tremendous strides in the use of herbicides in Southern agriculture since the introduction of the hormone compounds approximately a quarter of a century back. The road ahead is rapidly getting more difficult for all of us in agriculture. The productive farmer today is a specialist, demanding even more specific chemicals and tools to aid him in producing his crops.

What does this mean for all of us? It means intensified research by industry and our public service agencies and closely coordinated and expanded educational programs among all groups. It means that the Southern Weed Conference will have to assume an even greater role than envisioned by the founders of our Conference. Can we meet the challenge confronting all of us here today by accepting greater roles in our own phases of weed control? I am sure we can, because cooperation and a positive attitude has been the "trade mark" of our members since the organization began twenty-two years ago.

THE CHALLENGE OF THE SEVENTIES

John Pollard
Treasurer, Elanco Products, Co.
Indianapolis, Indiana

It is fitting, I think, that the Southern Weed Conference has as its theme -- Production Economy through Weed Science. Certainly, today, agriculture is at the crossroads -- interest rates have reached a new high -- years of government price support programs and acreage allocations have not kept the farmer and his hired hand on the farm -- corporate farming in some sections of the country is becoming a necessity to meet agriculture's need for a tremendous amount of working capital. During 1968 somewhere between 22 and 25 billion dollars in production money was required to operate our farms. Capital inputs are now so great that only the most efficient farmer will survive.

In our universities today there seems to be a great distance between the schools teaching the sciences and the schools teaching business. There seems to be a lack of understanding that, in our competitive free enterprise system, profit is a most essential ingredient.

As I look to the theme of your conference -- Production Economy Through Weed Science -- I immediately see a formula:

PRODUCTION + ECONOMY OR CONCERN FOR COST = PROFIT

Profit becomes wealth distributed by government and shared by industry and private individuals with universities and others who strongly support research in all scientific fields. As weed scientists, I am sure you are concerned with weeds -- Good weed control means lower production costs and higher yields with more profit to the farmer. I submit to you, then, that, as you consider research in the university and in the fields, you look at the impact of your developments and your recommendations on the cost and profit to the farmer. Those products -- techniques or cultural practices which serve profit must be given special emphasis as they will then in the long run, best serve our economy, our country, and our free enterprise system.

As a financial man, I am extremely interested in the business side of our society and the contributions which the agri-businessmen make in helping solve the very complex social and political problems which not only confront us in the United States but which are currently confronting all governments throughout the world. In my office hangs this statement:

> "Profits are best understood and appreciated by men and women who struggle to earn them, and best distributed by those who have pried them out of the jaws of expenses and taxes. Profit as a purpose is the lesson all must learn and spread throughout the land as an offset to critics of the Profit Motive because a profit is known, not only by the company it keeps, but by the country it serves."

I am not the author.

About 10% of the small businesses serving agriculture are closing their doors each year. Many of these firms go bankrupt while others are closed by the management after deciding it just isn't worth it. I submit that, as weed scientists, you must be vitally interested in just the plain -- profit and loss aspect of business management. To acquaint you with the complexities of management operations and, at the same time, review the impact of the changes taking place in agri-business, I would like to review what has happened in the market place and the problems which are developing as a result of these changes.

Farming as a way of life has passed and farming as a business is here. There is a rapid decline in the number of people working on the farm with the number of farms declining rapidly and the average acre per farm increasing accordingly. This was rather dramatically emphasized by Dr. Krimbel, President of the Federal Reserve Bank of Atlanta, at the A.B.A. Conference when he said -- When you take the rate of decline in the number of farms from 1950 to date, chart it, and carry the line out with the same curve, by 1990 there would be one farm in the United States. Obviously, this won't happen -- but it does emphasize the decline in the number of farms with the remaining farms becoming larger, more complex, requiring a great deal more sophistication in management, and certainly tremendous capital inputs in the operation. It is estimated that by 1980 there will be between 500,000 and 1,000,000 farms providing the food and fiber requirements of this nation and there will be between 30% and 40% fewer workers involved in agriculture at the farm level. The remaining workers will be providing food and fiber, not only to our rapidly expanding population, but to support our worldwide political, social, and moral commitments. Farm technology will move forward at such a pace that only those best prepared will survive and farmers will need to become more and more efficient to earn a profit commensurate with the ever-increasing capital investment.

This attrition is evident throughout all agri-business; and, as I mentioned earlier, in perhaps five years 50% of all the firms serving agri-business will close their doors. I don't mean to be over-pessimistic. Yet, it would be most unfair if the trends from which these conclusions were drawn were not discussed and pointed out in such a manner that it gives those in agri-business an opportunity to make a decision -- a decision that will mean an opportunity for greater economic rewards or an opportunity, if it can be called that, to fail.

Ours is a free enterprise system. At times the rules are hard and certainly the demands are great -- but so are the rewards. As a nation, it has produced the highest standard of living the world has ever known. As a people, we have made more contributions to mankind in alleviating suffering, overcoming starvation, controlling disease, and just plain sharing our worldly goods than any other nation or society in the history of mankind. This has been accomplished through a free enterprise system, a respect for profit, reasonable control by government, and a strong labor movement together with the finest educational system in the world.

Each of these important elements in our society needs to recognize that profit is the oil that lubricates our dynamic economy and creates the wealth that makes these accomplishments possible.

A study at College Station a year or so ago indicated there were three reasons why businesses fail and these are listed in order of their impact on the business itself:

1. The inability to select and train the right personnel.

2. Financial management, or should we say, the lack of it.

3. Ineffective or poor marketing practices.

Being a financial man, my forte and experience lie in financial management and I would like to share with you some of my thoughts on how the challenge of the seventies can be met through better financial management.

These past few weeks have had all the bankers talking about the cost of money, money supply, and asking the question -- Where is it going to end? To date, I have not found the first banker who says that the present rate is curtailing business activities or forcing cancellation of plans for capital expansion.

Universities, government, and all levels of business are being confronted with a very tight money situation. The prime rate, as you know, has gone to 7% and few borrowers in agriculture enjoy this preferential rate. Most businesses and certainly the farmers will be paying from 8% to 9 1/2% for money; and even at this cost, there probably won't be enough money to go around. With agriculture borrowing from between 22 and 25 billion dollars each year just for production money, the tight money markets and the increased cost of borrowed funds becomes a very serious problem. It may mean the difference between profit and loss with some businesses.

Why is interest suddenly so expensive? What has brought this about? Why is money in short supply?

Let's consider for a moment the two schools of economic thought which from time to time control our economy. The outgoing administration has been a strong proponent of fiscal policy control of our economy -- that is, keeping the fires of inflation under control by siphoning off from the public buying power through government policy -- the tax increase for example -- or, if the economy over reacts and turns down, increased government spending, a tax rate reduction, and the unemployment rate kept at a very low level with government financed make-work programs.

Other economists and government leaders favor controlling the economy with the Federal Reserve System or by monetary policy -- that is, largely through controlling the supply of available funds in the banking system. Generally, this is done two ways -- first, through the Fed's discount window. This is done by raising or lowering the cost of money to member banks when they sell loans

to generate funds to satisfy additional borrowers whose demands cannot be met from funds on deposit with the financial institution. This use of the discount window is not as important as the general public often assumes. More important and more effective control of dollars in the money market is for the Federal Reserve System to sell government bonds to its member banks which rapidly dries up the supply of loanable funds. If it is desired, to increase the supply of money in the banking system to give the economy a shot in the arm, the Federal Reserve System buys bonds from the bank making additional dollars available to borrowers.

As case in point, about 60 days ago when the French franc was in serious trouble, some of the flight capital in Europe moved into the United States. In one week $1,500,000,000 was placed on deposit in New York banks with exchange brokers, and other sources. The Federal Reserve System immediately invoked its powers by seeing that that these dollars were invested in government bonds rather than made available through normal banking channels for lending to would-be borrowers and, thus, feeding the already hot fires of inflation. The shortage of money, increased interest costs, and ever-spiraling labor costs all make it most difficult for agri-business to show a profit at the end of the year. Production Economy Through Weed Science -- a most important goal.

As weed scientists many of you are at least one step removed from the competitive market place; and, yet, the products from your efforts in research must compete in this market place and must provide a profit if you are to make a real contribution to agriculture and to our society.

Agri-business has had its share of bloodletting, particularly in the fertilizer industry. In the late 50's and early 60's, it seemed as though the companies basic in nitrogen could do no wrong. Plants were built, not only to satisfy the ever-increasing demand in the United States, but with an eye for the foreign markets -- markets that seemed to have unlimited potential. Food for peace -- population explosion -- everybody jumped on the bandwagon and, yet, many of the emerging nations had no dollars to pay for the fertilizer. Sales did not materialize -- the resources of our government became tied up in a costly war and the problems of our cities -- the popular food-for-peace program could not be implemented -- excessive plant capacity soon produced a glut in the fertilizer market -- the Kellogg process came along and manufacturing costs were halved. Additional plants had to be built if the major companies were to compete even though the industry had already borrowed about five billion dollars for plant expansion in the early 60's.

Lower prices and longer terms became the rule of the day and the industry ignored such things as profit, sound management practices, etc. Sales forces didn't approach the farmer relating soil analysis, trace elements, and fertilizer blends to yields and more profit for the farmer. They only talked about a better price with terms extending from six months to a year becoming common place. All of us in agri-business have felt the impact of this action and seemingly unwillingness to come to grips with the problem. We have ignored the profit factor which, in the long run, must prevail if agri-business is to remain economically healthy.

I mentioned longer terms particularly because I feel that many times businessmen fail to consider the impact of their decisions upon the customer. When a manufacturer extends long terms, and I mean by that terms longer than 30 days, the corporate treasurer gets into the act and an element is built into the price of the product based upon the value of money. This generally runs between 5% and 6%. The longer a receivable is on the books the less it is worth so bad debts increase. The corporate treasurer is going to insist that an elemen covering the increased bad debt losses also be included in the price -- so the farmer pays more in the long run.

But, it really doesn't stop here. Long terms have a tendency to compound the problem. The agricultural chemical dealer and the farmer begin to look upon this borrowed money as income and spend it accordingly. So, in the long run, they are asking the farmer to go bankrupt -- to fail -- to sell his farm to someone who has been wiser and more sophisticated in their business management practices. Those of us, then, who support the theory of the family farm and the keeping of farms from corporate hands have lost ground.

Recently I saw an interesting profile of an unsuccessful businessman and I would like to share it with you -- plant scientists may find a lesson here also:

"Management, and not the multitude of collateral factors, is basically responsible for the success or failure of a business enterprise. The finest plant, the fastest service, the highest quality product, the best-looking balance sheet, and the greatest potential market are lifeless liabilities in the hands of an incompetent manager.

"This incompetent manager is characterized by the following actions:

"He accepts problems at face value. (He sees a problem of manufacturing costs, for example, and starts a drive on cost reduction when the real problem may be obsolescence of equipment.)

"...makes, decisions without thinking through the conditions or objectives of solution.

"...is stubborn, full of pride and rugged individualism.

"...refuses to seek out expert advice in specialized areas.

"...is in love with status quo.

"...buys from the last supplier who made the best bar companion, and not the one who gives him the best service at the lowest ethical price.

"...is usually an expert in administration, sales or production, but not in all three -- and refuses to recognize this.

"...is unrealistically optimistic -- or pessimistic.

"...never becomes the really aggressive driving force behind his firm's sales program.

"...is a worrier, a detail man.

"...operates too much on sentiment or emotion.

"...does not look to the future but concerns himself with problems of the moment.

"...assigns responsibility without sufficient authority -- and authority without sufficient responsibility.

"...does not keep up with advances in his own industry or in operations of his competitor.

"...is a doer, not a thinker, and is proud of it.

"...takes everything out of the business he can in salary and expense.

"The quality and performance of its managers," the study observed, "is the only effective advantage an enterprise in today's competitive economy can have."

"Major results of poor management which lead directly to failure," the study continued, "are: 1) a loose accounts receivable policy, 2) a poor system of record-keeping, 3) over-borrowing, 4) under-capitalization, 5) under-pricing of goods or services, 6) too heavy administrative expenses, and 7) inadequate sales organization.

"Inventory problems, poor location, bad health, marital difficulties, and fraud are lesser but noticeable causes of business failure."

It is significant that the study pointed out that a loose handling of accounts receivable was the first evidence of poor business management and it became the primary cause of business failure -- ACCOUNTS RECEIVABLE IS NOT A GOOD PLACE FOR THOSE IN AGRI-BUSINESS TO INVEST THEIR FUNDS AS IT COSTS MONEY TO HAVE THE FARMER'S WORKING CAPITAL IN THE CUSTOMER'S BANK ACCOUNT WORKING FOR HIM RATHER THAN YOU. Working capital should be generated by collecting accounts receivable; and interest charges, when it is necessary to borrow money for operating expenses, seriously affect profit. As a case in point, let's look at what interest costs do to a profit at just 7% -- today's prime interest rate:

DECLINING VALUE OF ACCOUNTS RECEIVABLE AS THEY AGE

Sales	Cost	Net Profit	Interest costs at 7% Per Year Month	Amount	Profit Left After Interest Paid
$100	$97	$3	1st Mo	$0.57	$2.43
100	97	3	4th Mo	2.26	.74
100	97	3	6th Mo	3.39	(.39) Loss
100	97	3	8th Mo	4.52	(1.52) Loss
100	97	3	12th Mo	6.78	(3.78) Loss

To control accounts receivable, a sound credit policy is needed by those in agri-business. A credit policy is composed of the following:

1. A credit line for each customer recognizing sales potential, risk, and the management practices of the customer.

2. Terms of sale.

3. The maximum accounts receivable you company can carry without jeopardizing its financial position.

It should be kept in mind, however, that having these rules doesn't extablish the credit policy of agri-business -- for the credit policy is not a set of rules in a desk somewhere, but rather, how the rules are disciplined. This doesn't mean with an average customer, but how agri-business disciplines the rules with their best customer and their best friend. The phycological reaction of all customers is the same. Once a supplier has granted a favor either in the form of a special price or longer terms, it is going to be necessary that he test that supplier again and again to determine whether or not he really is the best customer or the best friend of the supplier; and, more often than not, misunderstandings develop and the harmonious buyer-seller relationship is lost -- profits suffer accordingly.

Production Economy Through Weed Science -- providing greater profits at a lower cost to agri-business -- increasing the food supply of a largely hungry world -- a worthy objective and a real challenge for the seventies.

It has taken all the millenniums of years from the time of Adam and Eve to produce our population of three billion two hundred million people. The next 31 years will see this population double even if we could today solve the political, social, and moral issue of birth control. This population is doubling at the time world leaders are saying that the threat of world hunger and mass starvation is a greater threat to mankind than the threat of nuclear warfare. It is happening at a time when world leaders are saying that ways must be found to upgrade the diets of the have-not nations.

Challenge -- Opportunity -- Yes -- Certainly as weed scientists, when you increase man's food supply at a lower cost, a real contribution has been made to all society.

It has been a real pleasure visiting with you today.

THE RESPONSIBILITY OF PUBLIC SERVICE AGENCIES IN WEED SCIENCE RESEARCH[1]

Roy L. Lovvorn, Director of Research
School of Agriculture and Life Sciences
North Carolina State University

You have honored me by inviting me to appear on your program today. Most of my professional life has been spent in the public sector and whatever conclusions or impressions that I have developed have come from these experiences. Such associations, both as a federal employee and at a state institution, have had a very profound influence on me and on my point of view. In this day and age public agency people do not operate in a vacuum and certainly not research administrators and so I hope my total exposure has been one that enables me to deal in an objective manner with research regardless of the sponsor. I suppose one could ask the question, "Is there a difference between the responsibility of public service and private agencies in weed science research?" Obviously, there are differences, but are not the differences more in the nature of our goals than in our procedures? Clearly our role at the universities and within the federal government is to develop weed science information that will be useful to our constituents and our constituents are the tax-paying citizens.

If our role is to develop weed science information that will be useful to our constituents, then we must fully assess what this means. We immediately become trust officers, just as much so as a trust officer in a bank in dealing with some estate that has been left to its management. To accomplish such a goal means that we as researchers must remember at all times that we are working for the common good and all of our decisions must be consistent with this position. I have seen some good research men become wedded to their project and regardless of the validity of their objectives at their initiation they simply could not bring themselves to a termination point. Sometimes we simply must accept the fact that the laws of diminishing returns have begun and the work is no longer justifiable. I know this is not easy for many of you but in my judgment, it is essential.

Priorities are never easy but we all live in a world of them. For some strange reason some of you live in an illusionary world in which you believe your problems could all be solved by doubling your maintenance budgets! Unfortunately, such is not the case. Whether we are conscious of it or not, we establish our weed priorities at the beginning of every growing season. The important point to be left with you is that priorities are necessary regardless of the level of your financial support. How do we establish priorities? These are decisions that must be made at every center where weed research is organized and clearly considerations for their establishment will vary from location to location. At

---

[1]Talk before the 22nd Annual Southern Weed Conference, January 21, 1969, Statler-Hilton Hotel, Dallas, Texas

our university we believe the decisions should be developed jointly by the weed researchers, his Extension counterparts, the Department Head and the Director of Research. Within such a group you should have the best brains of your institution. Neither should the decision be one in which a formal vote is cast. Democracy does not function in such a frigid climate. Research directors do not direct research but hopefully they do serve as coordinators in bringing to the subject matter groups broad political and economic considerations that may not always be obvious to the researcher himself.

Many administrators enjoy amusing themselves by constantly debating the virtue of basic versus applied research. Such academic debates have no appeal to my busy world. Our goal must be to serve our constituents and this we must not forget. To accomplish this goal requires that our weed research be organized so that the information coming from it is useful. Obviously, some is pointed toward developing information that is useful immediately, then other research toward more long-range objectives. The proportion of each type engaged in by any particular university or federal center will depend upon its local priorities, the talents of the staff and the needs for information at that point and time in history. We must not let ourselves fall into the artificial trap of two kinds of professional citizenship, and certainly promotions and salary adjustments must not be equated with the prestigiousness of the journal publications.

It seems to me there should be a clear distinction between the role of the state people and the federal people in weed research. Clearly the federal researcher should engage in problems of a national or regional nature. The federal government should never participate in weed research problems of a local nature. Not only is this a state responsibility but it is one that should be borne by them. There are plenty of research opportunities for the two public groups to complement each other. On the other hand, it must not be the prerogative of the federal scientists to assume the exclusive role of the basic researcher, leaving the bread and butter problems to the state employees. Many state universities within this region have outstanding weed research that has the depth and scientific appreciation of any weed research within the country, and this is as it should be.

I am not attempting to justify poor quality research. Far from it and I think there are two ways in which we can make our efforts more efficient; namely, through staff improvement and through better regional coordination. We began our weed work 25 years ago by converting from other lines of research. Many were not well trained and consequently were never fully prepared to tackle the problems that faced us. Fortunately we are now in the second step of manpower recruitment and if you are not adequately trained today, your employer has been short-changed and heaven help him and you!

Assuming that you were adequately trained at the time you received your graduate degree does not mean that your education will last forever. Some of us live under the mistaken idea that because we live, office and drink coffee with a group of intellectuals, we, too, are remaining intellectually sharp. An itellectual desert does not preclude a non-intellectual oasis. Our Southern

universities must find ways of providing sabbatic opportunities if they are to attract and hold the quality staff so necessary. The federal government is already becoming aware of the necessity of providing leave arrangements for research people to spend time away from their normal locations.

Generally speaking, we have not been completely satisfied with our regional approach, yet I am convinced that we must continue to explore ways of regional or across state line cooperation. This could mean more formal technical committees, and in some instances probably will, but I am thinking more particularly about cooperation across state boundaries within homogeneous growing conditions. An example: Growing conditions in our mountain counties are far more like Southwestern Virginia and Eastern Tennessee than they are in 90 percent of our own state. The growing conditions of our Coastal Plain are much more like that of Virginia, South Carolina and the Georgia Coastal Plain than they are in the remainder of our state. We have not fully utilized this situation but we must. You could cite other opportunities in your locality, I am sure.

The one characteristic that makes the university a unique center is the opportunity for training graduate students and this applies to federal employees located on the campuses as well. Those of you engaged in this activity will clearly mold your own destiny. Whether you are imaginative in developing thesis problems and in the teaching of modern theory will determine how far weed science will go in the future. It is in this area this historians will crown you with thorns or with praise, depending upon the choices you make now. Your influence is far greater than being chairman of a graduate student's committee, scheduling his courses, or helping to outline a thesis that the committee and Graduate Dean will approve. Your lasting contributions will come in shaping his attitudes. What kind of a scientific attitude will he acquire? What will be his attitude toward other disciplines within the university, toward his Department Head, the Administration, or just how effective have you been in teaching him the basic rudiments of lending an instrument to the person down the hall not known for his cooperative spirit?

When I joined the North Carolina Agricultural Experiment Station in 1936, I fully understood its role and that of the Agricultural Extension Service. I knew our role was to develop new information and their's to extend it. But 30 years of experience has taught me that the two divisions do not come out in two distinct boxes. I soon learned that I was expected to extend and furthermore that the research data never got organized into final answers. To me it has been reassuring to see many universities experimentating with ways of getting the job done. Clearly there is a twilight zone which industry calls Research and Development. To me this adaptive research is a logical function of the Extension Service.

At our institution we have found that joint appointments between research and Extension have worked very well. We have also encouraged Extension Specialists to engage in some applied research for three reasons: (1) Extension Specialists have the training, ability and interest to do a good job, (2) Some research should give them greater professional competence, and

(3) Extension Specialists are often available to tackle new weed problems without upsetting long-range experiments that are now in progress.

You have often debated the role of industry in relation to public agencies. By and large, I think we have a wonderful system of cooperation between the public and private groups. Industry has a public service orientation in that their image will remain good only as long as they market a good quality. We also recognize, however, that the new herbicide must eventually make money for the stockholders. Public employees must never lose sight of their responsibility to the total public. There are many who believe that public agency employees devote far too much time to product evaluation. There are some in industry, on the other hand, who believe that we in the public agencies devote too little of our resources to this endeavor. Philosophically, our interest in a new product of the industry should be governed by our appraisal of its potential for our constituents and not by the size of the grant or the ability of the industrial representative to sell us on the particular herbicide in question. Clearly it is to the private sector's advantage to have herbicides evaluated at some stage by public agency people. To make such a system equitable and effective, industry must be willing to put far more resources into grants than often has been the case in the past. Likewise, public agency employees, and universities in particular, must insist that industry pay its fair share. I am convinced that in many cases we have offered our talents for a $600 grant when it should have been a $6,000 grant!

In the future I am sure that we are going to have to give more consideration to our own individual efficiency. This means more sophistication, more expensive instrumentation, but such procedures should enable us to do a more effective job in learning the "why" of herbicide behavior. We hope that the phytotron that was recently officially dedicated at our university will provide an environment for weed research, not only for our local staff but for the region as well.

Our constituents in particular and the public in general are not going to be satisfied with our "hit and miss" results in the future and especially with regard to pollution. The public is already exceedingly conscious of the necessity of a clean environment, meaning less air pollution, less water pollution, and less soil pollution. It is our job to provide these answers.

We now have the mechanism through both the USDA and the State Experiment Stations to concentrate our efforts on regional problems. The regional federal laboratory that is now being built at the Delta Branch Station at Stoneville, Mississippi, should be a tremendous boost to all of us, not only those engaged at the federal stations, but at the state institutions as well. I feel that we have a bright future but I also know that the competition for the research dollar is going to be great in the years ahead. With a doubling of our population by the end of the century there is no possible way for your discipline to decline in importance. The slope of the curve, however, will depend upon your attitude, your ingenuity and your energy. I suspect your potential if fully realized will involve more brain power and less horsepower. The plain facts are (1) our total needs will exceed our resources, (2) adequate facilities for the future are going to be even more sophisticated and expensive, and (3) after a hundred years we must have learned something of the art of joint planning.

MINUTES OF THE BUSINESS MEETING
SOUTHERN WEED SCIENCE SOCIETY

Statler-Hilton Hotel
Dallas, Texas
January 22, 1969

President Lett called the meeting to order at 2:15 p.m. It was moved and passed that the minutes be approved as printed in the 1968 SWC Proceedings.

SECRETARY-TREASURER'S REPORT - Paul Santelmann presented the financial statement for the conference year of May 1967 through April 1968. He stated that the books of the Society were audited by McChesney and Machen, Public Accountants, in Auburn, Alabama for the last fiscal year.

Assets:

Checking Account	$7,395.02
Certificate of Deposit	5,000.00
	$12,395.02

Receipts:

Research Report and Proceedings	$4,307.70
Registrations and Banquet Tickets	8,754.00
Sustaining Memberships	6,100.00
Interest Income	112.50
	$19,274.20

Expenditures:

Publications	$7,623.49
Editor	800.00
Secretary-Treasurer	988.77
Program	457.51
Officers	231.69
Public Relations	91.68
Local Arrangements	1,403.69
Student Interest	140.49
Transfer to Certificate of Deposit	5,000.00
Refund	50.00
	$16,787.32

Respectfully submitted,
P. W. Santelmann

EDITOR'S REPORT - Presented by R. P. Upchurch

The 1968 Proceedings were published on April 1, 1968. Copies were mailed to individuals who registered at the 1968 meeting and to individuals and organizations whose names appeared on the standing order list. Complimentary copies of the Proceedings and Research Report were sent to Sustaining Members of the Conference. The 1969 Research Report was published on December 30, 1968, and 900 copies were dispatched to Dallas, Texas, for issue at the 22nd meeting.

Two mailings were made during the year to 124 mass media outlets in 15 states sending the program for the conference and news releases. Three letters were mailed to the 13 state Agricultural Information Editors. An advanced mimeographed copy of the program was sent them, giving them a list of the scientists from their states who would appear on the program and requesting that they interview or contact these scientists and obtain news releases of their papers and supply the Public Relations Committee with 50 copies for display on tables that will be made available in the Press Room during the conference in January 1969. Three news releases were sent to 600 daily and weekly papers regarding the conference. One news letter was mailed to all County Agricultural Agents in Texas telling them that farmers are invited to the conference. One letter was mailed to all Extension Specialists in the 15 states sending them news releases on the conference. Also, the Chairman met with all the Extension Specialist in the southern states in New Orleans on January 8, and gave them programs and further information SWC.

Bill Irish worked closely with the Local Arrangements Committee during the entire year making the facilities of his office and printing and public information facilities available.

The Chairman handled the vast load of correspondence with various individuals, made numerous phone calls over his WATTS line, made many personal contacts, distributed 300 copies of the program for the Southern Weed Conference to those not on mailing lists. The Chairman wrote each of the people appearing on the opening session requesting 50 copies of their paper or offering to duplicate these papers for them. The Chairman duplicated the paper for Harris Barnes, President of the American Soybean Association, and placed it in the Press Room.

Respectfully submitted,
Charles Ball
Herbert Brevard
Don Bynum
Bill Irish
Fred Elliott, Chairman

SUSTAINING MEMBERSHIP COMMITTEE - Presented by Douglas Boatright

Over 450 letters were mailed out to various companies in the SWSS area, and we have 105 sustaining members for the 1968-69 fiscal year. One hundred of these sustaining members were listed in the back of the program for the 1969 meeting. The sustaining memberships of the Southern Carolina Public Service Authority, the American Oil Company, the Humble Oil & Refining Company, and Tenneco Chemicals, Inc., were received too late to be included in the back of the program.

Respectfully submitted,
G. K. Brown
D. D. Boatright, Chairman

NOMINATING COMMITTEE REPORT - Presented by Robert A. Mann

Each member of the nominating committee compiled a separate list of names for each office. After this list was compiled, we discussed each candidate recommended and their past activities in the Southern Weed Conference, and make the following recommendations.

2. All dealers in all counties in the state are required to have a license to sell herbicides.
3. Define dry-type herbicides.
4. Places the responsibility of removing a county from jurisdiction of herbicide law in hands of Commissioners Court.

Respectfully submitted,
T. M. Waldrop
George Mullendore, Chairman

RESOLUTIONS COMMITTEE REPORT - Presented by Rogers (L.S.U.) for L. L. McCormick

RESOLUTION

Be it resolved that the Southern Weed Conference does hereby express appreciation to Mr. A. M. Hillis and associates on the Local Arrangements Committee for their efforts in making this meeting so successful and such a pleasure. Let this resolution be recorded in the minutes of this conference.

RESOLUTION

Be it resolved that the Southern Weed Conference does hereby express appreciation to Statler-Hilton Hotel, its staff and management for the cooperation extended this conference. Let this resolution be recorded in the minutes of this conference.

RESOLUTION

Be it resolved that the Southern Weed Conference does hereby express its appreciation to Robert P. Upchurch, Editor, Southern Weed Conference, for the very good work he has done and the tremendous amount of time he has devoted to it over the past three years. Let this resolution be recorded in the minutes of this conference.

RESOLUTION

Be it resolved that the Southern Weed Conference does hereby express appreciation to H. H. Funderburk, Jr., Secretary-Treasurer, for the very good work he has done and the tremendous amount of time he has devoted to the job over the past three years. Let this resolution be recorded in the minutes of this conference.

Respectfully submitted,
C. A. Burleson
C. G. McWhorter
L. L. McCormick, Chairman

It was moved and seconded that the report be accepted and approved, passed.

STUDENT INTEREST COMMITTEE REPORT - Reported by Rupert Palmer

Seventeen graduate students entered the student contest for awards to the students who presented the outstanding papers. Each student who entered the student contest received a copy of the conference evaluation form for review before preparing his paper. This number is the largest entered since this

program was initiated. Six judges, two each from Research and Teaching, Extension, and Industry made the selection of winners after hearing the presentations.

The three graduate students who presented the outstanding papers received awards of $50, $30, and $20. The following students received the indicated place and award:

First Place - D. N. Weaver, Texas A&M University
Second Place - M. D. Neptune, Auburn University
Third Place - J. E. Marler, Louisiana State University

These awards were presented at the luncheon. A student breakfast and a luncheon ticket for each student were supplied compliments of the Southern Weed Science Society.

A letter was sent to a selected state representative which pointed out the benefits that the Society now provides for graduate students. They were asked to post this letter for student review.

The Placement Service, with a secretary, was provided for persons with "Positions Desired", and "Positions Available". The number of "Positions Available" listed were 15 and of "Positions Desired" 8. Position forms were sent to a selected state representative of Weed Science and each SWSS sustaining member prior to the Conference. The completed forms were displayed with appointment forms for convenience of the employee and employer.

Respectfully submitted,
Dale R. Darling
Billy J. Gossett
Rupert D. Palmer, Chairman

It was moved that the names of the award winners and the co-authors be included in future reports. Seconded and passed.

SITE SELECTION COMMITTEE REPORT - Presented by Leonard Lett for the chairman.

Sites have been decided on for 1972 and 1973. Conflicts have developed with other meetings for the previously preferred sites, for instance the Jung Hotel in New Orleans was booked up in 1972 whereas this hotel, the Statler-Hilton, was open in 1972, therefore, a tentative commitment was made to the Statler-Hilton Hotel for the third week in January in 1972 in Dallas and with the Jung Hotel for the third week in January in New Orleans in 1973. The meeting in 1970 is to be held on January 20, 21, and 22 in the Atlanta Biltmore Hotel and the meeting for 1971 is at the Peabody Hotel in Memphis.

AD HOC EVALUATION OF RATING SYSTEMS COMMITTEE REPORT - Presented by Gale Buchanan

It was noted at the 1968 business meeting of the Southern Weed Conference that considerable interest was being directed toward developing uniform rating systems for evaluating herbicide effects in research field plots. Both the European Weed Research Council and the Northeastern Weed Control Conference ave devoted considerable study to rating systems with a view towards recommending one system for uniform usage by their members. Justification advanced for striving toward such uniformity lies in the fact that many different

systems are in current usage and being reported in Weed Science literature. It was felt that much confusion could be eliminated by the development of a uniform system readily understood by both research workers and those responsible for making herbicide recommendations.

It was the opinion of this committee that only two major rating systems should be evaluated for consideration by the Southern Weed Conference. The first one selected was the one most commonly used in this country -- an index system from 0 to 10, or a modification of it employing percentages from 0 to 100. The other major system under consideration at the present time is that developed by the European Weed Research Council (EWRC). Highlights from both systems and the committee's evaluation are presented below.

EWRC rating system

It has been noted that this system employs artificial numbers based on a scale approximately logarithmic. Ideally, ratings are limited to single digits in the most critical areas of interest. The individual ratings represent groups or ranges of percentage values for both weed control and crop response as follows:

EUROPEAN WEED RESEARCH COUNCIL RATING SYSTEM

Weed Response

Rating	% Weed Control	Verbal Description
1	100	Completely destroyed
2	99.0 - 96.5	Very good control
3	96.5 - 93.0	Good control
4	93.0 - 87.5	Satisfactory
5	87.5 - 80.0	Just satisfactory
6	80.0 - 70.0	Unsatisfactory
7	70.0 - 50.0	Poor
8	50.0 - 1.0	Very poor
9	0	As untreated

Crop Response

Rating	% Crop Injury	Verbal Description
1	0	No reduction or injury
2	1.0 - 3.5	Very slight discoloration, etc.
3	3.5 - 7.0	More severe, but not lasting
4	7.0 - 12.5	Moderate and more lasting
5	12.5 - 20.0	Medium and lasting
6	20.0 - 30.0	Heavy
7	30.0 - 50.0	Very heavy
8	50.0 - 99.0	Nearly destroyed
9	100	Completely destroyed

Thus, more ratings are available at the end of the scale where good control of weeds is being obtained or only slight crop injury is being produced. Advocates of this system feel that there are fewer non-meaningful numbers involved, particularly at the lower end of the scale where interest is the least. It has also been noted that no particular problems are encountered when such data are subjected to statistical analysis.

Zero to one hundred rating system

This particular system, or variations thereof, has been used widely by research workers in this country for several years. Many persons employ a modification known as the zero to ten rating index for their results. It is generally agreed, however, that such an index can be converted to percentage figures by simple moving a decimal point one place to the right. This report, therefore, considers only the aspects of the system insofar as the ratings made are essentially percentage figures.

In this system, the lower end of the scale, zero, is used to denote a lack of plant response regardless of whether weed or crop. The upper end of the scale, 100, then denotes complete destruction of the plant, again regardless of whether crop or weed. Intermediate ratings or points on the scale are assigned on a straightforward arithmetic basis. It should be noted that this system differs from the EWRC system in that no reversal of ends of the scale are necessary in assigning ratings to denote either complete plant destruction or no effect. The system generally employed is as follows:

0 TO 100 RATING SYSTEM

Rating	Description of Main Categories	Detailed Description
0	No Effect	No weed control No crop reduction or injury
10	Slight Effect	Very poor weed control Slight crop discoloration or stunting
20		Poor weed control Some crop discoloration, stunting, or stand loss
30		Poor to just fair weed control Crop injury more pronounced, but not lasting
40	Moderate Effect	Weed control only fair Moderate injury, crop usually recovers
50		Weed control fair to moderate Crop injury more lasting, recovery doubtful
60		Moderate weed control Lasting crop injury, no recovery

(0 to 100 Rating System Cont.)

70		Weed control somewhat less than satisfactory Heavy crop injury and stand loss
80	Severe Effect	Satisfactory to good weed control Crop nearly destroyed - a few surviving plants
90		Very good to excellent weed control Only occasional live crop plants left
100	Complete Effect	Complete weed destruction Complete crop destruction

This system usually employs five main categories: no effect, slight effect, moderate effect, severe effect, and complete effect. Once the response has been fitted to one of these main categories it then becomes a matter of final judgement as to placement within the category. Many persons employ more than one rater for plot evaluation and then use an average of ratings for final statistical evaluation.

Committee evaluation of the two systems

It was soon determined that all members of this committee employed the 0 to 100 rating system or its counterpart, the 0 to 10 index. Furthermore, it became apparent that none of the numbers were particularly anxious to change to another system. Therefore, a charge of bias would not be misplaced regarding the validity of this evaluation. Nevertheless, objectivity was sought for in making a critical study of the two systems. It was admitted that the EWRC system did provide more categories for better weed control and fewer for poor weed control. From this standpoint, the system did appear to be more realistic for expressing desirable or satisfactory weed control, and de-emphasizing or giving less weight to unsatisfactory weed control. The major drawbacks to the system, however, seem to be in the area of interpretation. Since the committee members were most familiar with evaluation of weed control results directly in terms of percentage figures, it was soon found that the EWRC system required an extra step in interpretation. This is so because the rating numbers are only representative of percentage categories. It was noted that percentage figures were universally understood, were simple to employ, and were more straightforward than the one to nine EWRC system.

Ease of statistical interpretation was considered by some members of the committee. It was admitted that the one to nine system could be adapted to statistical analysis. Nevertheless, it was also pointed out that percentage values could be analyzed statistically upon transformation to angles. While this may seem to be an unnecessary complication, many universities now have available computer centers which can program the transformation to angles as part of the analysis. Therefore, it was felt that statistical analysis of percentage figures presents no difficulties. Finally, in the two situations where concrete comparisons were attempted in avaluation of the two systems, those persons engaged in rating plots found the EWRC system difficult to understand and to use in assigning meaningful values. Again, it must be noted that

these persons are thoroughly familiar with the 0 to 100 or 0 to 10 rating systems and had little practice on the EWRC system before using it.

In conclusion, there is a strong preference among members of this committee for the 0 to 100 rating system. Nevertheless, this committee is reluctant to impose this or any other particular rating system on members of the Southern Weed Conference. It is felt that individual preference and interpretation of results is important for creative research efforts. It is believed also that obvious advantages of one system over another may become apparent as systems are used over a long period of time. These advantages, perhaps, will be as persuasive in moving toward uniformity in expressing weed science research results as attempts toward imposition of uniformity through structures such as the Southern Weed Conference.

Respectfully submitted,
G. A. Buchanan
C. L. Foy
W. M. Lewis
R. E. Frans, Chairman

V. S. Searcy raised the question of crop injury ratings, particularly as regards to interpretation problems when submitting data to USDA in support of label applications. Buchanan indicated that crop "injury" is misleading; crop response might be a better term.

Stanley McLane reported on the NEWCC evaluation committee activities. He stated that their committee did not try to establish a uniform rating system, but instead gave some suggestions on setting up rating or evaluation systems. These will be printed in the 1969 NEWCC Proceedings. After some discussion of this and also of the possible function of the committee of the fourthcoming year it was moved and seconded that the committee report be accepted as presented and that the Executive Committee decide on this committee's activities for the coming year. Passed.

Old business was called for by President Lett. Robert Mann indicated that Max Hardie of Georgia had had a heart attack since coming to Dallas for this meeting and moved that the Secretary send a telegram to him at St. Pauls Hospital indicating the conference's sympathy and extending membership for the 1969 meeting, seconded and passed. President Lett than passed the gavel on to President-elect Baker.

President Baker called for new business, there being none the meeting was adjourned at 4:00 p.m.

P. W. Santelmann
Secretary-Treasurer, SWSS