

Industry's Role In Weed Science

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Dr. Klingman has served as President of the Weed Science Society of America and the Southern Weed Science Society. He recently retired from North Carolina State University where he was active in teaching and weed control research. He has authored several books on weed control.

WEEED CONTROL as we know it today is a part of modern agricultural technology. The importance of this technology to the consuming public, to our basic economy, to our way of life and to agriculture itself has been repeatedly pointed out.

There are probably few who are not familiar with the risk/benefit ratio. Almost every thing we do has a risk/benefit attached to it.

Those of us that have worked in agriculture are convinced that in modern herbicide development the risks are very low compared to the benefits. The fact that in the United States we are enjoying a brief period in history when our ability to produce food exceeds our needs is due to our acceptance of these minimum risks.

Then — where are we headed in the next twenty-five years?

There are a few points that most thinking people quickly agree on. The population in the United States, and certainly in the world, will rapidly increase. Space just for people will take up a considerable amount of present day farm land. Thus, there will be less land for food production, even though greater food supplies will be needed.

Food will become much more critical. The consumer of food and the producer of food will become

even more distantly separated. At the same time, the palate of this late twentieth century man will become even more discriminating. For example, he will likely want increasing supplies of green leafy vegetables and fruits.

If proposed prescription pesticide use becomes a reality, certain agribusinesses will develop rapidly. Custom service may take a number of forms. Probably the first will be greatly increased custom application. We can also expect the organization of professional service groups providing technical advice and recommendations, and assistance to the farmer in meeting requirements.

I would agree with these proposed new regulations and the millions that it will cost society if there was any evidence that our food supplies are in fact being dangerously contaminated with herbicides. But we now have a well developed monitoring system. Data from this system show that our food supplies are healthful and free of dangerous residues. Where abuses exist, we already have the laws and the mechanisms to correct those abuses. There is no need to place an additional super-structure over and above the effective one now doing an excellent job. Therefore, I seriously question the need for this

pesticide regulation. I question that it will give us a safer food supply, or prevent accidents — but it may come. If it does come, we will pay for it through higher food costs, higher taxes, and through considerable inconvenience to both the farmer and merchant.

Those trained in biology are well acquainted with "survival of the fittest." Only within the past hundred years has there been adequate food plus developments in medicine to permit rapid increases in the human population. Through history whenever too many people or too many animals developed in a given area, nature quickly acted through famine or disease to bring about the needed balance. It was truly a survival of the fittest.

We should remember that those biological laws have not been repealed. Technology has simply made it possible for most of us to temporarily escape the full force of these biological laws.

The risk/benefit ratio of technology has certainly been in man's favor. I would hope that more ecologists recognize that herbicides can be used to manage the environment to the advantage of wildlife, birds, fish — and, thus, can be a friend to

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INDUSTRY'S ROLE (from page 22) these species — just as they are a friend of man.

Let us consider weed science as we know it through education and research — and the effects that industry may have in the future.

The need for weed science education will increase during the next twenty-five years. Much of the confusion concerning pesticides and agricultural chemicals has total misunderstanding as its roots. Frequently, critics do not even understand elementary chemistry, elementary plant physiology and elementary ecology as it relates to agricultural production. The answer appears obvious. We must have better education in these areas.

Modern entomology and plant pathology are less than fifty years old, and modern weed science is less than twenty-five years old. Only a handful of college of agriculture graduates have had any real training in weed science. Less than ten percent of our college of agriculture graduates have had a single course in weed science. The public has had almost no education in the subject.

More and more, I hear comments

that industry must do more toward education in weed science. I readily admit that more education is needed. Industry may produce movies, slide sets, circulars, etc. thereby helping some.

However, education, per se, is not the job of industry. Industry education will remain product oriented — to gain more widespread and better use of their products.

Undergraduate and graduate university training is the cornerstone to better understanding and a better informed public. Others from industry that have supported increased university training in weed science include Dr. Hannah of Monsanto, Dr. Wolf of E. I. duPont, Mr. Adolphi of Geigy, Mr. Mullison of Dow, Dr. Fertig of Amchem, and others. Let's keep our thinking clear. Universities are for teaching and research. The challenge cannot and will not be adequately met by industry.

In education areas, probably the greatest overlap occurs in the marketing and sales area of industry and that of university extension. Both are working toward the adoption of new, and assumed to be, improved

practices. Both appeal to the same motives and senses. Having now worked reasonably close to both, I would say that there is almost no difference in personality, and capabilities of a good university extension worker and a really good industry salesman.

Dr. Don Davis of Auburn University and Dr. Larry Hannah of the Monsanto Company have alluded to the fact that the farmer is placing less and less emphasis on experiment station recommendations when he decides what herbicide to use. It would appear to me that this same trend has continued through the past five years. I would guess, however, that this varies from state to state, depending upon the adequacy of research data and the soundness of recommendations coming from the experiment station and extension service of the state.

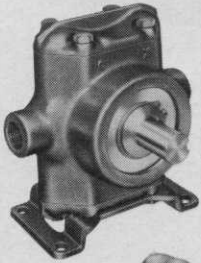
I still maintain the view that research, including field research, should be done by the State Agricultural Experiment Station. Also I feel equally strong that the original concept of adult education, probably through demonstration, is an appro-

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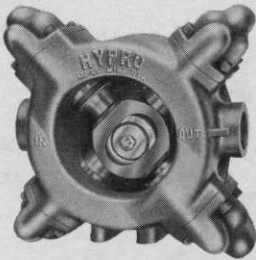
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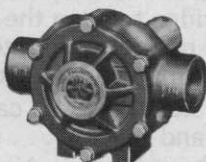
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appropriate full time challenge for the Extension Service. Seldom does the extension man have time to do more than a demonstration type field research.

The quality of the research and the type of research done is more critical than whether the research is done by the experiment station, the extension service, or by industry. I suspect that all of us learn to rely on that information source which proves to be accurate.

It is my belief that the farmer would prefer to look toward the schools of agriculture for his information. In addition he would like to trust someone that can develop a "Total Technological Involvement" approach. In such a program a new practice will have to prove its effectiveness before being generally included as a farmer recommendation. This would apply equally to each new entity to be placed in the system. We would then cease to make excessive claims about new pesticide control programs until they have demonstrated their efficacy in such a system. Industry, in its own interest, will do this kind of research. However, for overall recommendations to the farmer, it becomes obvious that such research needs to be done under public support finances.

The research suggested here would be costly and complex. Therefore, adequate information must be developed on a practice prior to including it in a total technological involvement program. The experiment station supplement with industry research is well suited to the development of this early information — as is the case today.

A chemical synthesis program for new herbicides should be carried out by industry. Synthesis programs aimed at patenting chemical entities are not an appropriate activity for public supported institutions.

A synthesis program done in a university under the direction of a private company and primarily for the benefit of a private company should not expect public support. Early screening programs done under similar arrangements should also not be done at public expense. Few, if any, public supported institutions are organized with adequate organic chemists and biologists to determine activity in an entire chemical series and, also, have well trained patent attorneys to suggest synthesis programs, to write the patent, and then to protect it. A poorly conceived program may succeed in "muddying the water" suffi-

ciently to destroy all commercial interests in the area.

With development costs as they are today, no company can bear the development costs without some patent protection, and under conditions that give the full seventeen years originally intended in the patent laws. Thus, an important discovery may never be developed if it lacks full and complete patent protection.

It should be obvious that the patent system must be allowed to function fully. Without such protection, research and development monies will disappear. Not only will there be no new products for industry, but there will be no new products for agriculture, and mankind will not have the benefits of cheaper and more abundant food supplies.

I was surprised to learn the amount of "mechanism of action" and other so-called "basic" research that goes on in industry. Here it is taken for granted that this type of research must be done to gain label clearances, and it may be helpful in extending the chemical activity of any one chemical series.

Much of industry's research is not published due to the fact it may be continuing to develop leads within the area. Public supported research should expect industry to increase its research above present levels. There is room for both the university and industry researcher — however, there is considerable duplication of effort at this time.

For the sake of mankind, it would be well if we could work ourselves out of our jobs. However, the weed problem is more durable than all of us combined. The field of play and the emphasis may change — but it will remain a professional challenge in spite of the best talents in industry, the university, and the Agricultural Research Services of USDA.

Ohio Landscape Contractors Elect Officers

The Professional Landscape Contractors Association of Ohio recently elected new officers. They are: N. H. Strnad, Strnad Landscape Contractors, Cleveland, President; V. Apanius, Better Lawns & Gardens, Inc., Richmond Heights, Vice-President; N. T. Strnad, Strnad Landscape Contractors, Secretary; R. C. Swinerton, Swinerton's Landscaping, Eastlake, Treasurer.