

AGRONOMIST DR. ORVID LEE TALKS HERBICIDES AND SEED

Editor's Note: The Willamette Valley of western Oregon has become established as the center of world grass seed production, and herbicides are recognized as the best, most complete and least expensive route for keeping weeds out of seed. Choice of herbicide, time of spraying, rate of spraying, soil moisture and method of application spell success or failure for the grower.

Back of the grower, however, are new ideas and trials of investigators such as Dr. Orvid Lee of the USDA stationed at Oregon State University in Corvallis. In the following interview, Dr. Lee responds to some timely questions on grass seed output and development.

Q. There has been dramatic progress in Oregon's \$30 million seed industry in the past 25 years. Research-wise, where are we now?

Dr. Lee: Growers and seed companies have the basis for still more progress. We can identify seed industry needs better today and we have the capacity to undertake joint programs to meet those needs, with a very large reservoir of know-how among the growers.

Q. How would you summarize research progress and industry progress?

Dr. Lee: In a single word it is **precision**. We have always had a target, for example, of growing seed that is free of weeds. But we have been able to raise our standards through new techniques that are increasingly precise. Herbicides have played a key role in these techniques.

Q. Can you be specific?

Dr. Lee: Well, we have half a dozen different herbicides, and most seed growers have learned how and when to use them. Two new ideas in the past few years are the chem-

ical seed bed and charcoal seeding. Both are designed to establish seedling grasses that are completely weed-free.

Q. How are these ideas applied by a grower?

Dr. Lee: When the chemical seed-bed technique is used, the grower prepares the field for planting in the fall. Weeds and volunteer crop plants which germinate during the fall and winter are controlled by spraying with 2,4-D and IPC or with paraquat. The crop is then planted early in the spring without additional tillage. Since most of the troublesome weeds germinate during the fall and winter they are eliminated from the surface soil before the crop is planted. When the charcoal banding technique is used, activated charcoal is sprayed in a narrow band over the crop row at the time of planting. The field is then given a broadcast application of Karmex diuron. The activated charcoal over the row absorbs the diuron protecting the crop plants planted beneath it. The result is a grower can more easily meet his responsibility of producing weed-free seed.

Q. What kinds of grasses are these ideas used for in Oregon?

Dr. Lee: Growers here now produce 100 percent of the nation's annual and perennial ryegrasses, more than 99 percent of the bent grasses, 99 percent of the chewing and creeping red fescues, and about 72 percent of the orchardgrass. If you include Washington and Idaho, we also produce over 90 percent of the bluegrass. Altogether there are at least 1,000 growers of seed in the area, where there is a rather unique combination of climate and soil conditions that are ideal for seed production.

Q. Are new seed varieties developed here?

Dr. Lee: Yes, but our real contribution is our ability to multiply seeds that are developed elsewhere. We increase breeder seed more efficiently than anywhere in the world, and seed companies turn to Oregon growers to meet specific demands for their new varieties.

Q. How does your work tie in with the new varieties of seed?

Dr. Lee: My function is to help keep contaminants out of the seed. By this, I mean weeds and unwanted crop grasses. Seed companies are now going direct to the growers to multiply their new seeds. We have to keep ideas and know-how flowing to the growers, so they can meet their seed contracts on the new varieties. With about 40 trials and tests underway every year, many on growers' fields, we are able to generate a lot of understanding rather quickly.

Q. Does this apply to how growers use herbicides?

Dr. Lee: It certainly does. Split applications of Karmex, for example, have been found useful in fall and winter, when we get most of our rains. But we have found it necessary to adjust the rates, depending on specific grasses that are being grown. A grower must learn this, and field trials are a great teaching tool . . . as well as a learning experience for any investigator.

Q. What kinds of tolerances does a grower have to meet?

Dr. Lee: When it comes to weeds and contaminating crop seed, he must have 100 percent control or he is penalized on price. A decade or so ago, a grower was permitted 3 percent annual bluegrass in certified seed; today annual bluegrass

seed cannot exceed 0.30 percent in certified seed. In some states today the tolerance for annual bluegrass in seed is zero. A grower can usually earn a seven to ten cent or more per pound premium for weed-crop-free seed — that's a very worthwhile target.

Q. How has all this affected his use of herbicides?

Dr. Lee: Where a grower was once concerned with establishing his crop first and then eliminating the weeds, now he is working to keep the weeds and unwanted grasses out of his seedling crop right from the start. That's where the chemical seed bed, the charcoal seeding with Karmex, split applications and alternate applications of herbicides all fit in. Our growers are combining these ideas.

Q. What is the most critical period, when it comes to herbicide use by a grower?

Dr. Lee: Getting a clean grass seed crop established is the most sensitive part of his operation. His first responsibility, of course, is to plant clean seed on clean land. Then he must keep weeds out as seedlings develop — this can be difficult.

Q. What kinds of gains have growers realized through new herbicide programs?

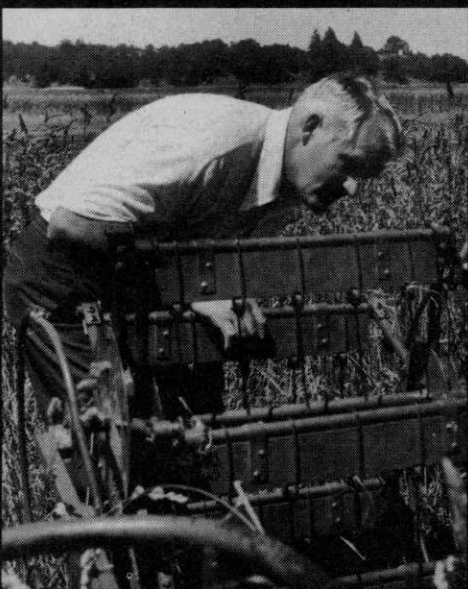
Dr. Lee: The chemical seed bed concept provides a good example. Prior to 1965, a 20-30 percent failure in stand establishment was normal. The loss stemmed from competitive grasses and weeds. But this loss has been sharply reduced — especially on flat areas, where the new techniques can be employed. Use of the chemical seed bed or charcoal seeding has already established new standards in getting a crop started.

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Dr. Lee runs more than 40 trials each year. Here, John Couch of Du Pont and Dr. Lee review results of 1973 trials.



Equipment check of seed harvest reflects Dr. Lee's interest in diverse aspects of his field trials. This unit is used in small scale tests.

Q. What kinds of problems do growers face today?

Dr. Lee: One is the possible application of new regulations that will limit a grower's opportunities to try new compounds and new techniques. The grass seed grower is in a key role, when it comes to the environment. His crop is needed and wanted by the turf and forage industries, but he must have a measure of flexibility in herbicide use to be able to deliver seed. If we limit this flexibility, we cannot look for the quality seed that we have come to expect.

Q. Is the seed grower aware of this situation?

Dr. Lee: Many are not. They are accustomed to precision application of herbicides; they understand risk-benefit ratios in these applications. If broad spectrum herbicides or long-lasting herbicides were suddenly banned, a grower would be handcuffed in his program to deliver weed-free seed. The trend to eliminate some of the residual herbicides should be a matter of concern not only to seed producer and turf producer — but also the consumer who wants a weed-free lawn. Without these products, we could not keep the U.S. green and there would be no export of grass seed, which today is a flourishing, useful business.

Q. Any other problems on the horizon? What about Oregon's proposed ban on field burning of straw, after a crop is harvested?

Dr. Lee: This ban, now scheduled for 1975, has cast a shadow on the entire seed industry in the state. Quality is going to be a problem. Burning now helps to destroy most of the weed seeds in a field and creates conditions which are

favorable for herbicide activity. It also helps control disease and provide a means of disposing of crop residues. Seed growers have depended on field burning as a basic cultural practice. There is work on a mobile incinerator to make it possible to continue burning with much less smoke. We are exploring concepts for alternating crops in vegetable areas, but as of now, we have no real solution. Field burning has been needed — it is still needed.

Q. How long does it take to introduce a new idea to seed growers?

Dr. Lee: Four or five years are usually involved. We started our initial studies on charcoal seeding, for example, back in 1967; we have had a label on the idea with Karmex for two years, and much of our current program is still involved with this technique. The practice is quite widespread in Western Oregon, but it is still being developed east of the Cascades.

Q. What, then, are basic resources of the seed industry?

Dr. Lee: It comes down mostly, I think, to people. The industry is a complex one that uses a wide range of techniques just to control weeds, for example. In Western Oregon, we have a unique combination of physical elements, but we also have the people who have learned how to use these elements and their know-how is irreplaceable, when it comes to growing seed on 275,000 acres of land. The same situation applies in Central and Eastern Oregon, where another 25,000 acres of seed are grown each year. Our growers have a vast amount of experience in seed production. It is an extremely valuable resource. □