Editorial

Trends in Extension Plant Pathology

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Trends in extension plant pathology develop from an interaction among the basic plant disease control needs of society, availability of appropriate new knowledge, and a positive climate for change. Detecting the needs of clientele and bringing about meaningful and beneficial change is the traditional mission of extension. It naturally follows then that extension plant pathologists act on and utilize a body of technical subject matter while reacting to and serving the needs of society.

While essential to resource utilization, the projection of future trends is difficult and risky because the future is not a linear extension of the past or present. Changes that occur in any one facet of society impact on changes from all others. Perhaps it is better to first consider those things that are likely to remain unchanged. Human nature, for example, has not changed appreciably. Basically, people need a wholesome and predictable food supply, desire to make a good living from their occupational endeavor, and aspire to maintain their health and see their children grow to be healthy, productive citizens.

The fact that we are biologically bound to agriculture because of our human dependency on a healthful food supply is yet another unchanging factor. This, along with stabilizing traits of human nature, will keep agriculture vibrant.

To be effective scientists and educators, we will have to respond appropriately to a myriad of changes in the economic sector, in technological development, and in social structuring. One such change occurring now is a shift in farm size. An unpublished study at Texas A&M University shows that the number of large farms is decreasing, but their acreage is increasing (80–85%). The number of small farms is increasing, but they are decreasing in acreage and total productivity (20–25%). Middle-sized farms are decreasing as the number of small farms and the size of large farms is increasing. In analyzing this trend, extension plant pathologists will have their greatest impact, acreagewise, by working with those fewer farmers with larger acreages. On the other hand, there will be more producers with small acreages who will have plant disease control needs just as individually critical to them.

For advances to occur in plant disease control, it will be necessary to assume that the research sector will generate the necessary amount of appropriate knowledge. One must build in a sufficient amount of healthy skepticism just in case this becomes a limiting factor in the future. Some research budgets have been cut, and it is common knowledge that agricultural research does not enjoy the priority level given to areas such as medical science. This is a modern-day irony when slightly over 2% of our population are engaged in production agriculture and produce food so inexpensively that we have to spend only 12.7% of our income for our daily sustenance.

Assuming that humankind will continue to rely, as it must, on healthy plants and that new knowledge will be forthcoming from research, extension plant pathology will be called on to deliver more educational programs to effect desired change. Projected needs of the agricultural sector that seem destined to influence trends in extension plant pathology are perceived as:

- More reliance by large producers on professional consultants,
- Greater demands for applied information in plant pathology,
- Increased use of computers in decision making,
- More reliance on professional diagnostic services, and
- Movement toward a holistic approach to plant disease control.

More reliance by large producers on professional consultants might first make it appear that extension will play a lesser role in future agricultural developments. This almost certainly will not be the case, however, because a greater requirement will be placed on acquisition of specific information. Consultants will not be as inclined to blame disease incidence on weather factors but will seek underlying causes for less-than-optimum production. Consultants will be used as option developers instead of decisionmakers, and this will provide more opportunity to infuse plant disease control concepts into the production system.

Extension professionals of the future must be versatile, well trained, and adept in educational methodology in order to assist the better-educated producers in charge of larger farms.

Greater demands for applied information in plant pathology will certainly occur. Excellent progress has been made in this area in recent years, and individual states and the American Phytopathological Society have produced numerous bulletins, books, and compendia. Many of these works have treated the descriptive aspects of disease recognition and control that were necessary for initial recognition and formulation of controls. It is expected that publications of the future will feature integrated control strategies that have a higher level of effectiveness. Much of the history of phytopathology has been occupied in discovering the parts, and the future is likely to be utilized to determine how the parts fit together.

Increased use of computers in decision making will offer special challenges to extension plant pathologists. The euphoria of potential soon becomes ameliorated with the reality of what can be done with available knowledge, however. Decision aids and information retrieval programs are now available in some areas, but knowledge is often lacking to optimize needed programs. Advocating the use of computer programs for decision making that lack certain critical elements may place responsible individuals in a libelous position.

Artificial intelligence is now a reality in certain areas of medical science and holds promise for application by our discipline as well. There is no doubt that computer use in agriculture, as in other fields, is a trend and extension plant pathology must pursue it vigorously.

More reliance on professional diagnostic services is a trend that modern agriculture will enjoy. Several laboratories are now functioning in plant pathogen identification as medical diagnostic laboratories have functioned for many years. More reliance is being placed on such methods as use of antisera, fluorescing antibodies, ELISA, specific media isolations, and electron microscope observations. Land-grant universities are the more likely sources of diagnostic services for plants because of high equipment costs. Extension plant pathologists will be expected to operate laboratories of this caliber.

Movement toward a holistic approach to plant disease control is a natural evolution in agricultural technology. Enough of the individual parts have now been discovered to permit extension plant pathologists to consider control of all diseases instead of looking at control strategies for individual diseases. While not new, the consideration of total plant health gives broader consideration to the control of an array of plant disease problems.

In conclusion, we can expect the rate of change to accelerate to the extent that extension programs will be overtaxed if careful attention is not given to staffing patterns. A trend toward more sophisticated production systems will demand answers available only for highly effective extension programs with the responsibility and capability of combining all available information in proven and effective packages.