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Integration of Research, Education and Extension in Plant Pathology

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It is an obvious turism that research, no matter how valuable and epoch making it may be is useless until it is shared with those who have the ability or desire to utilize its results. It should not only reach the interested scientific colleagues of the investigator but also the 'ryot' for whom it is ultimately intented. Some suggestions as to how this may be achieved in a subject like Plant Pathology are offered below.

Research and Education : The first aspect of passing on information to interested colleagues will be embraced by a broad definition of education. In the present set-up of the Agricultural Department the graduates are drafted for research or extension as soon as they take their science or agricultural degrees. Those who enter the research sections have the opportunity to continue their education while in service. By education it is meant here not only the taking of higher degrees but also the acquiring of specialised knowledge in any particular branch of agriculture. However, it may perhaps be suggested here that this education of the research worker requires to be more systematically canalised in such a way that intensive specialisation in particular fields of research is possible.

Turning to the extension worker, under the present set-up his chances of acquiring advanced technical knowledge are very meagre. Plant protection is a highly specialised branch of agriculture. In recent years very rapid advances are being made in the science of Plant Pathology. This is especially so in the development of newer types of fungicides, improved application machinery, knowledge of specialisation of parasitic organisms etc. Plant protection assistants get very little oppurtunity, while in service, to acquire specialised knowledge on these newer line of development. The fundamentals of plant pathology alone are taught during the agricultural degree course. Before this knowledge is put to practical use a training in the practical aspects of plant pathology is absolutely necessary. It would, therefore, be desirable to complete the education of the plant

protection staff, that a formal course in Plant Protection is instituted. This course should comprise of regular lectures, practical and demonstration classes and field trips. The information relating to the following aspects should be imparated to the trainees

1. A thorough familiarity with all S. Indian plant diseases with particular emphasis on diagnostic field symptoms.
2. Estimation of disease prevalence and intensity and assessment of loss due to crop diseases.
3. Methods of handling diseased specimens for study and investigation.
4. A knowledge of various groups of fungicides, their dosages, timing of application of fungicides and degrees of tolerance etc.
5. A knowledge of conditions favouring epiphytotics; forecasting such epiphytotics.
6. Hazards of fungicides and antidotes.
7. Application machinery, their uses and care and upkeep.
8. Techniques of publicity and mass contact.

A training on the above lines but perhaps, for a shorter period and with emphasis on some of the aspects alone would be a good equipment for any Agricultural Demonstrator also. It would also be possible to devise a simplified training for the village level worker. The facility of this training can also be made available to the interested educated ryot.

Extension: In countries with a high percentage of literacy great stress is laid in the dissemination of research through the agency of printed popular publications like circulars, bulletins, leaflets etc. Even in such countries great emphasis is laid on an efficient extension service. In our country in view of the low literacy level of the cultivator the printed word has very limited value. It is, therefore, necessary to lay more emphasis on the spoken word and this can be done only by personal contact with the ryot. This obviously involves having a larger number of trained personnel. This would also help the research worker to be kept thoroughly informed of the plant disease situation and problems in the countryside. Another important point to be considered in this context is the limit up to which information can be passed on to the ryot, in his present state of literacy and especially in a subject like

Plant Pathology. We may aere compare Plant Pathology with the pathology of man. A great deal of general information regarding the human diseases is part of the general knowledge of most educated men. Yet no one would think of treating himself, except to a very minor extent, without the aid of a trained doctor. In Plant Pathology, however, even the elements of symptomology are not known to most people. The need, therefore, for trained practitioners of plant medicine is even greater than in human pathology.

At present there are two Plant Protection Assistants for each district. This obviously is too inadequate as the average area of cultivated land in each district is about 1·5 million acres. This means that at present each plant protection assistant has to take care of over seven lakhs of acres. It is obviously impossible for one person to bestow personal attention on such an enormous area even for purposes of a cursory survey, let alone carrying out of control measures. The Plant Protection Assistant has necessarily to depend on information supplied by the ryot. Very often it becomes too late for taking any useful control measures as most of the harm would have been done by the time the information reaches him. Most plant diseases have to be prevented rather than cured. For prevention early diagnosis is essential for which a close and continuous watch over the crop is necessary. One should also be very familiar with early symptoms of diseases which are often too subtle and inconspicuous to the untrained eye of the layman. The solution lies, therefore, in having more and more trained plant protection personnel.