

25 April 1933.

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Dear Fryer:

Thanks for your letter on insect pests and the sampling method.

With respect to possible simplification of the latter I think there are two things to be distinguished. One is the theoretical point on which the sampling technique we have developed really hinges: namely, that for each observational result we have valid internal evidence of its precision and therefore of the significance of any comparisons made with its aid. This is essentially the means for judging what bulk of observations are actually needed for each specific purpose and so ~~for~~ cutting one's observational programme down to the minimum which will meet practical requirements, and of knowing how much additional time and labour it will cost to meet any further requirements which may be suggested.

To say that this condition must be fulfilled by any scheme worth doing, and this I am inclined to say, is a very different thing from saying that field observations must aim

at any scrupulous or meticulous standard of accuracy. For once results are available from a genuine sampling process it would be possible to plan with confidence a programme of observations of any desired degree of roughness.

The basis we have to work on, on the agricultural side, is about eight centres which may rise to ten or twelve, at each of which there is someone capable of taking sample measurements or of giving instructions to, and supervising an assistant, made available for additional work. The wheat records can actually only take a small fraction of the observer's time, and they all have, no doubt, other duties from which they would have to be partially relieved if anything more than our skeleton programme were to be expected from them; but if the Ministry could get them so relieved for additional work, centrally organised, I am inclined to think that we might be able to devise an observational programme which would justify it.

I suppose in the case of most diseases, including frit, the bulk of the observations must be done at one time of the year though perhaps supplementary observations at other times might be useful. If for say, three weeks each year, during which the critical counts can be made, the observers at these eight to twelve centres were freed entirely for sampling work, it would, I suppose, be possible for them to take from each

of 25-⁵30 neighbouring commercial farms, chosen e.g. as one in each square mile of the local survey sheets, duplicate composite samples from fields of oats or wheat, or other host crop. According to the nature of the case these samples could be examined at the station or your laboratory, but between them they should give for any one year or epidemic, useful information as to variability in the same neighbourhood and a useful but not detailed knowledge of incidence in different parts of the country. In the case of regular pests too, you would build up reliable comparable figures of incidence from year to year. The administration^{etc} essential, is that you should have a call at short notice, on the whole-time services of these observers for periods, let us say, not exceeding a month a year and that we should get out and circulate with a minimum of delay sufficiently detailed instructions as to the practical procedure to be followed. As we are both in Harpenden, I do not see any real obstacle to this last point which is, as I think you will agree, absolutely vital to the efficiency of the organisation.

The sampling procedure is in itself perfectly simple and it would scarcely be too much to ask if it seemed useful, that all research workers on the agronomic side should be capable of carrying it out. It is obvious that the exigence of any

programme which requires that the observations shall be taken at a particular time, will be very considerably eased when there are two or three people at each station who have all had some experience of the process.

Yours sincerely,