

Voorburg, 9 April 1987

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Dear M.S.,

The draft report was slow in travel and reached me only a few days before my move to The Hague. What a pity that it had to be so lengthy! I fear I do not have time to read it thoroughly; even if I had the time, most of the text falls outside my knowledge. However, I can comment fairly extensively on the sections dealing with computing and statistics.

I was glad to read (p. 250) that computer resources will be brought together. I hope this means that the Head of the Computer Centre will be responsible for the central microcomputer resources and for computer communications, as well as for the mainframe. Of course individual departments and sections need their own micros, and I certainly would not advise rigid control of choice or use, but some broad policy standards are needed.

I am sure that the emphasis on data storage and ease of information exchange is important. The electronics of this ought to be easy today. Has enough thought been given to the human side? I recall talking with Dr. A. (I forget the identities, and would not mention them even if I could) and suggesting that further analyses of various series of field experiments could yield valuable information on the relative merits of alternative types of experimental design. The findings would not affect research conclusions from past experiments, but could be important to the economics of IRRI's research programme; if an incomplete block design in 3 replicates were as precise as a design in 4 complete blocks, the savings in space and other costs might be substantial. But, Dr. A. said, the most useful data were from Dr. B's experiments, and he would never agree to release them for Dr. A, or for a statistician, to examine. I picked up at least one other similar story involving different people. This appals me. Of course Dr. B has a right to protect and advance his own career. He cannot be expected to give someone else the full data from his most recent experiments and to permit that person to write the definitive reports on them. On the other hand, surely he cannot claim all rights for years ahead in data from experiments for which IRRI has paid. Possibly what I was told was incorrect, but that Dr. A believed it to be true was worrying.

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When I was with you, I had the impression that your computer system was developing excellently, and the indications from the report are that the trend continues. I was pleased to read that you contemplate having an occasional consultant. Dr. G.E. Thomas, now with CSIRO Australia, was Director of our University Computer Service from 1965 to 1985. He did a first class job in building up our facilities, covering all aspects from scientific number crunching to library management. I believe he would be a valuable consultant - not least because he has much to do with agricultural research.

On page 261, I think the first sentence on statistics is weak. Would you be happy with the same thought if "Chemistry" or "Botany" replaced "Statistics"? I would insist that each of these disciplines (and others) must be integral parts of any balanced agricultural research programme.

I do not understand the distinction between the Statistical Services Unit and the rest of the Department. Whatever the history may be, should there not be a total integration today? The consultation facilities, on statistical method and statistical computing, are of course vitally important. I cannot understand, and I doubt whether many readers will understand, the statement (p. 263) that "computing services are provided through staff consultation services and not directly to researchers".

Towards the end of page 263, remarks are made about the development of statistical techniques. Of course I approve of necessary developments, but if I were a member of one of your governing or advisory committees I should want much more detail. What types of technique are wanted that are special to rice? What sharing of ideas is there with other institutes that have analogous interests (CIMMYT, etc.)? In what ways do statistical problems of on-farm trials differ from those of research station trials, and to what extent are these problems for rice not encountered with other cereals (especially the temperate cereals on which so much statistical work has been done)? What is the past record of the Department in the development of techniques? What are the human resources of the Department for any of this development? I do not wish to be unkind, but in 1984-85 I saw no indication of any methodological research in progress. The reason was obvious. Only one person has the background appropriate to innovatory developments, and her time is very fully occupied with the general running of the department and with special responsibilities within IRRI. I am unfair, perhaps, as I know that Dr. Gomez was spending a lot of time on database development, an activity marginal to statistics and computing; recent years have brought so much production of general structures for data bases, however, that again I am left with the thought that IRRI should see how far these can be adapted to its needs before investing substantial resources in writing special software.

I am deeply concerned at the proposal (p. 264) for a micro-based statistical package. Of course I recognize that, if appreciable amounts of routine statistical analysis are to be handled on micros, good software is very important. This is true whether the computing is to be handled within the Statistics Department or in other Departments. But the architecture of a package and its implementation into computer code are work demanding considerable time even from people of great skill and experience. Without full specification of intentions, estimation of the time required is impossible, but I guess that 2 to 3 person-years would not be unreasonable for a package intended to handle data manipulation,

analysis of variance and covariance for standard experimental designs, multiple linear regression, computations relating to frequency distributions and tests of significance, some types of non-linear regression, and similar things. Now time moves on. Early in 1985, IRRISTAT was talked about. I offered to help in discussions and hoped to be useful, though even then I had doubts about the project. However, I was given no information and I know nothing of what has been done in the subsequent 2 years. Surely if there is to be any success, there should by now be plans in far more detail than is indicated on page 264.

In the meantime, in other places software development for micros has been great. Not only are there statistical packages specially devised for micros (some, I believe, even oriented towards agricultural research), but other major packages have been adapted to micros. These latter include GENSTAT and GLIM, two of the packages most widely used for agricultural research, and MINITAB. There may be good reasons why none of these is adequate for IRRI, but any proposal to spend scarce resources on IRRISTAT should be based upon a critical analysis of alternatives and should include a careful presentation of what the main features of IRRISTAT would be. The real cost of producing IRRISTAT might be anything from \$ 25,000 to \$ 100,000; does this bring a balance of advantage over alternative packages? Please be clear that I do not pretend to know the answer, but I am sure that the various questions must be asked and studied before IRRISTAT goes ahead.

My worry does not end here. I mean no disrespect to Dr. Gomez and her staff in saying that the staff is inadequate for the purpose. A good package needs to have its ideas "kicked around" among several people, and to have the writing and checking shared. This is not merely a matter of reducing the time to completion, though that aspect is important; the exchange of ideas and constructive criticism of structure and code will greatly improve the quality of the product and I view them as essential. Before I retired, I had a staff of 15-20 graduates employed on agricultural research statistics. Of these, 5 or 6 had very considerable experience in software writing and only 2 or 3 had no skill of this kind. A few years ago, we discussed undertaking development of a general package but concluded that we could not spare the resources from our existing duties. We already had the experience of producing a rather specialized suite of programs for handling coordinated series of variety

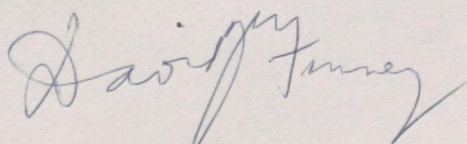
trials: this had gone very successfully but must have involved four people in a total of perhaps 6 person-years of time. I have a true respect for Dr. Gomez's organizing ability, but I must say bluntly that she has much less experience of software planning than several of my people; she has (or had) only one assistant skilled in software writing, a hard-working and able young woman of whom I thought highly, but one who was largely self-taught and who lacked all exposure to the software outlook of centres elsewhere in the world where experience is great.

You will, I know, excuse my frankness on this matter. I admit to having felt grieved by my exclusion from all discussions on software in 1985, but I am much too busy to react out of irritation or jealousy today! I am solely concerned at the allocation of IRRI resources to a task for which they may be ill-suited, and a task that possibly can be avoided by use of

software written elsewhere. Those same resources may perhaps be more usefully deployed in other ways. Objection to software because it is NWH ("not written here") is a widespread cause of resource wastage: it should never be sustained without comparative evaluations of alternatives and of costs (both in money and in manpower).

My only other general reaction to the report is a little unease over the part to be played by PA300. Of course no one should deny the importance of this aspect, but I find myself wondering whether an institute superbly equipped for the high technology of rice research can successfully explore the less well defined socioeconomic side of rice production, or whether this is something more properly undertaken by appropriate national bodies. I know that you and your colleagues must have given much thought to such questions, and that you may be subject to external pressures. I am ignorant, and perhaps am foolish even to mention my worry.

Yours sincerely,



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Director of the ISI Research Centre



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